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## Direct and indirect effects of the Right to Education Act on the enrolment of disadvantaged groups in India

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## **Direct and indirect effects of the Right to Education Act on the enrolment of disadvantaged groups in India**

by

**Athira Vinod**

### **Abstract**

Using longitudinal school data from India, this paper examines enrolment trends of socially disadvantaged children post the Right to Education (RTE) Act, which mandated the reservation of 25% of private school places for such children. Post-RTE, a significant increase is observed in disadvantaged children attending private schools. Difference-in-differences analysis reveals greater increases in schools previously below the 25% quota, especially those participating in the reservation policy. The results are however driven by a ‘substitution’ of places, where private schools are replacing free places under the policy with fee-paying disadvantaged children.

**JEL Classification:** I21, I22, I24, I28

**Keywords:** Private schools, Disadvantaged groups, Right to Education Act, Reservation policy



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## **Outline**

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# 1 Introduction

Universal primary education has been one of the major global educational goals over the past few decades. In low and middle-income countries, the push towards universal primary education has been part of a broader agenda of promoting human development and reducing poverty. The UN's Millennium Development Goals and Sustainable Development Goals set a target to achieve universal primary education by 2015, and 'equitable quality education' by 2030. As a result, many countries have introduced policies that have successfully increased enrolment rates, improved infrastructure, and reduced gender disparity. However, there are still significant challenges such as high dropout rates, poor quality of education and high socio-economic barriers to accessing primary education.

At the same time, there has been a growing demand for private education in the last twenty years. While the advocates of private education believe that it is better than public education in terms of quality and accountability, others argue that it only caters to a privileged section of society. Private schools are often criticized because they lack inclusiveness and are not affordable for the poor. Yet, there has been a substantial increase in private school enrolment, especially in developing countries.

There are various studies that have linked increasing private school enrolment to the existence of low-cost private schools in developing countries (De et al. 2002, Tooley & Dixon 2003, Kingdon 2020). These schools have a low per-child expenditure and charge a relatively lower fee than regular private schools. However, some other studies have found that these low-cost private schools are still not affordable for the poorest and those from socially marginalized communities (Härmä 2009, 2011, Hill et al. 2011).

Empirical evidence on whether private schools offer better quality education has been somewhat mixed. For instance, Angrist et al. (2006) and Dixon et al. (2019) found that poor children attending private schools through free vouchers had better learning outcomes in Colombia and India respectively compared to children who did not receive the vouchers. However, Muralidharan & Sundaraman (2015) found no effect of such vouchers in Andhra Pradesh, India. On the supply side, public-private partnership (PPP) programs have been launched, where the government enters into a funding arrangement with private schools by offering them subsidies. Several studies have analyzed the role of PPP programs in schooling in the Asian (Tooley & Dixon 2006, Amjad & Macleod 2014, Ansari 2020) and African (Mfum-Mensah 2003, Tooley & Dixon 2006, Akyeampong 2009) context. These studies have found mixed results in terms of improved accessibility and learning outcomes for disadvantaged children.

In line with the Millennium Development Goals, India introduced the Right to Education (RTE) Act in August 2009, which became effective on April 1, 2010. It is a legal provision that made primary education a basic human right in India. It necessitates

free and compulsory education for all children in the 6-14 age group in government<sup>1</sup> schools. The RTE Act also includes other norms aimed at improving infrastructure and the quality of education. To reduce socio-economic inequity in accessing good quality education, the government also implemented a public-private partnership under the RTE Act. It required all private schools to reserve at least 25% of their places for ‘economically weaker sections’ and ‘socially disadvantaged groups’, and offer them free primary education in return for a reimbursement from the government. It is this public-private partnership that I analyse in this paper.

Like other developing countries, India has witnessed a sharp increase in private school enrolment. Between 2010 and 2016, private school enrolment increased by 38.5% (Kingdon 2020). On the other hand, enrolment in government schools has sharply declined. However, whether the RTE Act had a role in explaining this shift towards private schools is understudied in the literature. Similarly, whether private school enrolment also increased for the economically and socially disadvantaged in India is yet to be explored.

The aim of my paper is to investigate whether there was an increase in the enrolment of socially disadvantaged children in private schools, especially following the implementation of the RTE Act. Using descriptive evidence from a comprehensive school-level dataset (District Information System for Education), I first look at the trends in primary school enrolment across different types of schools. I find that private schools witnessed an increase in the enrolment and share of disadvantaged children relative to government schools. The increase was larger after the RTE Act was implemented. Seven years after RTE, the enrolment of disadvantaged children in grade 1 increased by 1.5 million in private schools. Much of this increase was driven by the entry of new private schools rather than an increase in school size.

However, there was also an increase in the enrolment of disadvantaged children in private schools that existed before the RTE Act. To understand the impact of the RTE Act on these enrolments, I employ a difference-in-differences strategy. I find that schools that previously had less than 25% disadvantaged children witnessed an increase post-RTE — their enrolment of these students grew by an additional 6 percentage points after the Act was implemented. To further examine this surge, I investigate whether the RTE Act’s policy that mandates private schools to reserve 25% of their seats for disadvantaged children was the catalyst. Using a triple-difference model, I compare two sets of schools: schools that adopted the 25% reservation policy and schools that did not adopt this policy. Interestingly, the enrolment surge of disadvantaged children was not confined to just the policy-adopting schools. Schools that did not adopt the 25% reservation policy also saw increased enrolments. Nonetheless, the increase was more pronounced in schools that did adopt the reservation policy.

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<sup>1</sup>In India, all schools managed by the central, state or local governments are collectively known as government schools.

Furthermore, I find that the number of places filled under the reservation policy explains very little variation in the size of total disadvantaged children enrolled in the same grade. When enrolment under the policy increased by 10%, the enrolment of disadvantaged children only increased by 1.6%. This indicates a substitution of disadvantaged children paying private school fees for disadvantaged children getting free seats under the policy.

Yet, the increase in the enrolment of disadvantaged children does seem to be tied to the RTE Act. The sharp increase in their share is only prevalent in years after RTE was implemented. The increase is also higher in states where the RTE Act was enacted and where a higher proportion of private schools participated in the reservation policy.<sup>2</sup> These findings suggest a positive and ‘indirect’ effect of the RTE Act on disadvantaged children’s enrolment in private schools. Subsidized private education under the reservation policy could have some indirect implications for the targeted children such as increased awareness about private education leading to increase in demand. At the same time, other provisions of the RTE Act such as free government education or establishment of more government schools could be correlated with the increase in private school enrolment. If that is true, it would be challenging to disentangle the effect empirically.

The findings from my paper largely imply that many private schools which had a lower share of disadvantaged children before the policy, were encouraged to offer more places to them following its implementation. But they did not do so explicitly through the reservation policy. Nonetheless, schools that participated in the reservation policy offered free places to disadvantaged children in addition to enrolling fee-paying disadvantaged children. This resulted in a higher increase in the overall share of disadvantaged children in these schools, which is in fact a ‘direct’ effect of the policy.

The literature on the RTE Act has primarily focused on its overall implementation and effectiveness. Using data from the Ministry of Human Resource Development (MHRD) Mehrotra (2012) was the first to examine the cost and financing of the RTE Act. He found that the majority of the budget for the RTE Act was spent on teachers’ salaries in government schools. State-specific studies have found small increases in enrolment of girls and SC children as well as improvements in infrastructure post the RTE Act. (Ojha 2013, Malakar & Mahato 2015, Singh 2016).

At the national level, Shah & Steinberg (2019) found enrolment in grades 1-8 to have significantly increased post-RTE, particularly for girls. However, it is not clear how much the increase in total enrolment is associated with the RTE Act as Shah & Steinberg (2019) also found a significant jump in enrolment after 2008, two years before the Act came into effect. Bhattacharjee (2019) found that there were significant differences in

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<sup>2</sup>The RTE Act was not enacted in the state of Jammu and Kashmir while many other states do not seem to have implemented the reservation policy at all.

enrolment across states and between school types. Examining this further, Bhattacharjee (2019) concludes that the increase in enrolment was driven by improved sanitation and not just the RTE Act.

The study by Sarin et al. (2015) is one of the few to have looked at the implementation of the RTE Act's reservation policy in private schools. Using state-level data from DISE and the MHRD, Sarin et al. (2015) calculated total enrolment and total seats filled under the policy in rural and urban areas. Only 29% of the total available seats were filled under the policy by 2013-14. Moreover, only 22% of all private schools were participating in the policy in the same year. Sarin et al. (2015) also found large variations across states. For example, Andhra Pradesh had not implemented the RTE Act 5 years after its introduction. In Uttar Pradesh, both the seat fill rate and the school participation rate were the lowest despite the state government formally administering the policy.

Private schools' response to the reservation policy under the RTE Act has been largely understudied. While the report by Sarin et al. (2015) studies the policy's enforcement at the state level, my paper investigates the policy's effect at a more granular level. Specifically, it uses school-level data from DISE to look at the response to the policy from the school side, both at the national and state level. Additionally, using a difference-in-differences model with school-fixed effects it investigates the effect of the policy on the enrolment of disadvantaged groups in private schools.

My paper also contributes to the literature on private schooling in India. The demand for private education in India has amplified in the last two decades. This is largely due to the perception that private schools offer better quality education. There is evidence that suggests that private schools in India outperform government schools on a variety of quality indicators. Even after controlling for confounding factors, students in private schools have higher test scores than their government school counterparts (French & Kingdon 2010, Tooley et al. 2010). Moreover, private schools have better infrastructure and less teacher absenteeism (Tooley et al. 2010, Kingdon 2020).

The growing demand for private education in India has been met by an increase in the supply of private schools, especially 'low-fee' private schools. This has resulted in an increase in the overall enrolment in private schools. However, studies have found that even such low-fee private schools are not economically or socially equitable and the poorest in India still cannot afford private education (Härmä 2009, 2011, Hill et al. 2011).

In general, there has been a nationwide increase in private school enrolment in the last ten years in India (Kingdon 2020). Using data from DISE, NSS, and ASER, Kingdon (2020) compares private and government schools on the basis of size, growth, teachers' salaries, fee levels and per-child costs. Kingdon (2020) found that between 2010 and 2014, there was a 44% increase in the number of private schools in the country. This was almost 12 times the growth in government schools. Total enrolment in private

schools increased in the same period while government school enrolment declined.

The current literature has established a shift from government to private schools in India in terms of enrolment, especially following the growth of low-fee private schools. However, the accompanied increase in social inequity and exclusion of the poorest have raised some concerns. In the midst of that, the reservation policy under the RTE Act was a landmark step that made school choice ‘free’ for the poor, at least in principle. My paper adds to the literature by finding that there are more SC/ST children attending private schools following the RTE Act’s implementation. This suggests that there has been an increase in the social equity of children from minority groups in the private education sector. But a majority of these children are not directly enrolled under the reservation policy and are in fact paying fees to attend private schools. This implies that economic equity for the poorest has still not improved.

The rest of the paper is arranged as follows. Section 2 describes the Right to Education Act in detail. Section 3 describes the dataset and presents some descriptive statistics from the data. Section 4 compares the enrolment and share of disadvantaged children across different types of schools. Section 5 estimates the effect of RTE on the share of disadvantaged children and discusses the results. Section 6 undertakes some robustness checks. Finally, Section 7 concludes.

## **2 The Right to Education Act**

### **2.1 Overview**

The Right to Education (RTE) Act was introduced in India in August 2009. It is a national-level policy that became effective in April 2010 in all states except Jammu and Kashmir. The main aim of the RTE Act was to make primary education a fundamental right of every child in India. It mandates that all children in the 6-14 age group have access to free and compulsory education in government schools. Free education implies that no child enrolled in a government school is liable to pay fees or incur any expenses till the completion of primary education (grade 8). Compulsory education makes it mandatory for the government authorities to ensure admission and completion of primary education by all children in the 6-14 age group. Within three years from the commencement of the Act, the appropriate government (state or local) was also required to establish a school within 1km of residence, where no such school previously existed.

In addition, the RTE Act prescribes duties for schools which include maintaining infrastructure standards, teaching equipment standards, adequate training of teachers, school working days and a pupil-teacher ratio of 30:1. It also introduced a no-detention policy under which no student could be detained from being promoted if they failed



exams in grade 5 or grade 8. However, in 2019, a bill was passed in the parliament to scrap the no-detention policy as a way of improving the quality of education in schools.

Furthermore, the RTE Act requires all private unaided<sup>3</sup> schools to be legally recognized by the state government. This implies fulfillment of certain requirements with respect to total expenditure, total area of the school, enrolment, number of lavatories for boys and girls, and prescribed curriculum till grade 8. Schools that fail to meet these requirements have to be shut down by the government under the RTE Act.<sup>4</sup> For the rest of the paper, I refer to private unaided schools as simply private schools.

## 2.2 Reservation in private schools

The RTE Act also incorporated a policy under which all private (recognized) schools in India are required to reserve at least 25% of their seats, at entry level, for underprivileged children and provide them free education till the completion of grade 8. The main aim of this policy was to create a socially inclusive environment for children from different backgrounds and to give them the opportunity to access private education, which predominantly remains unaffordable for the poor.

The entry-level for reservation can either be grade 1 or a pre-primary grade at the discretion of the school. The RTE Act recognizes underprivileged children as those who either belong to **economically weaker sections** or **disadvantaged groups**. Economically weaker sections include children whose parents earn an annual income that is below a certain threshold determined by the state government. Disadvantaged groups mainly comprise three social categories in India— Scheduled Caste (SC), Scheduled Tribe (ST) and Other Backward Class (OBC).

The threshold levels set by the state government and the definition of disadvantaged groups vary largely across states. For instance, in the state of Madhya Pradesh, only children from families below the poverty line<sup>5</sup> are included under ‘economically weaker sections’, whereas in the state of Rajasthan, the threshold level is ₹2.5 lakh (USD 3,396) per annum, which is well above the poverty line. So, while both Madhya Pradesh and Rajasthan identify SC and ST as part of ‘disadvantaged groups’, Rajasthan also identifies children from OBC whose parents earn an annual income that is no more than ₹2.5 lakh (USD 3,396).

For each child admitted under the RTE Act, private schools are entitled to receive reimbursement from the state government. The amount of reimbursement is equal to the

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<sup>3</sup>Private unaided schools are non-government schools that are managed by an autonomous private body and do not receive any maintenance grants or funds from the government.

<sup>4</sup>Despite this, a large number of private schools that are unrecognized continue to operate in India (Kingdon 2020).

<sup>5</sup>In 2011-12, the poverty line was fixed at ₹9,372 (USD 128) per annum in rural areas and ₹11,580 (USD 158) per annum in urban areas.

per-child expenditure incurred in state run government schools or the actual per-child fee charged by the private school, whichever is lower. In each state, the state government fixes the per-child reimbursement rate every year which is supposed to be equal to the per-child expenditure in the state's government schools. This means that private schools with a per-child fee lower than the reimbursement rate will be reimbursed the actual fee that they charge for each child admitted under RTE. On the other hand, private schools with a per-child fee higher than the reimbursement rate will be reimbursed an amount equal to the latter.

There is a large variation in the reimbursement rates fixed by different state governments. Table 1 shows the reimbursement rates in Rajasthan and Madhya Pradesh from 2012-13 to 2015-16. The reimbursement rates in both states have been increasing every year but the amount has been considerably higher in Rajasthan. In 2012-13, the reimbursement rate in Rajasthan was three times the reimbursement rate in Madhya Pradesh, while in 2015-16, it was almost four times that in Madhya Pradesh. The payment schedule also differs in both states. The reimbursement is made to private schools at the end of every academic year (in March) in Madhya Pradesh. In Rajasthan, the reimbursement is made in two installments, first, in October of the current academic year and second, in June of the next academic year.

The difference in the reimbursement rates can be attributed to the variation in the per-child expenditures in the states. According to Dongre & Kapur (2016), the calculated per-child expenditure in government schools in Rajasthan was ₹11,576 (USD 139) in 2011-12, while in Madhya Pradesh it was ₹8,066 (USD 97). Another potential reason for the difference in reimbursement rates could be the difference in the allocation of funds toward the implementation of the RTE Act. The RTE Act prescribes that the central and the state government must share equal responsibility in providing funds to carry out the provisions of the Act. However, according to the Ministry of Education, the central government did not contribute towards the reimbursement expenditures until 2014. As a result, between 2012 and 2015, the government of Rajasthan made reimbursements to private schools using its own budget. On the other hand, there was no separate budget for the RTE Act in Madhya Pradesh. To carry out its provisions, the state government used funds available under *Sarva Shiksha Abhiyan*<sup>6</sup>, which is released by the central government to the states every year.

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<sup>6</sup>Sarva Shiksha Abhiyan (SSA) is a flagship programme of the Government of India that is aimed at creating a nation where all children aged 6-14 complete primary education. The RTE Act is the legal enforcement of SSA.

Table 1. Reimbursement rates fixed by the state government (Amount in ₹)

Year	Rajasthan	Madhya Pradesh
2012-13	9,748	3,065
2013-14	11,704	3,478
2014-15	14,141	3,826
2015-16	17,732	4,209

Notes: 1 USD = ₹83

Source: Report of the Comptroller and Auditor General of India for the year ended 31 March 2016.

### 3 Data

For the analysis in my paper, I use the District Information System for Education (DISE), which is a nationwide database of roughly 2 million registered<sup>7</sup> schools of India. DISE database was created by the National University of Educational Planning and Administration (NUEPA) under the Ministry of Human Resource Development (MHRD) in 1995 and was later redesigned in 2001. Each year, DISE publishes school annual report cards on its official website. These report cards consist of state-level and district-level school statistics on key variables such as total number of schools (government and private), total number of classrooms, grade-wise enrolment by gender and social category, enrolment ratio and total number of teachers.

DISE also includes raw data at the school level. It is a panel data of schools, which is presently available for all academic years from 2005-06 to 2017-18. Relevant variables include grade-wise enrolment by gender and by social category, type of school (government or private), category of school (primary, upper-primary etc.) and enrolment of students with special needs.

From 2010 onward, DISE raw data of schools also includes information on key variables related to the reservation policy of the RTE Act in private schools. Specifically, from 2010 to 2012, all private schools were asked how many students applied and enrolled under the 25% reservation policy in grade 1. From 2013 to 2017, they were asked how many students enrolled under the reservation policy at entry level and how many continued from previous years.

The DISE data has information on the enrolment of children by social category from grades 1 to 8 only. So, I consider grade 1 to be the entry-level. Since DISE does not have information on the family income of children, I cannot identify the economically weaker sections. Therefore, I only focus on the enrolment of disadvantaged groups in my paper. I use the definitions of disadvantaged groups prescribed by the state governments in their official RTE notices<sup>8</sup> to calculate the grade-wise enrolment of the groups.

<sup>7</sup>DISE does not collect information from unregistered/unrecognized schools.

<sup>8</sup>For official definitions see: [https://www.education.gov.in/hi/rte\\_dw](https://www.education.gov.in/hi/rte_dw)

So, disadvantaged groups technically include all children who are eligible for the reservation under the policy.

States such as Haryana, Mizoram and Tamil Nadu do not enrol SC, ST, OBC children or children with special needs under the policy. Similarly, Jharkhand, Meghalaya and Tripura only include SC and ST children from families below the poverty line. As a result, I cannot precisely define disadvantaged groups in these states and thus, exclude these states from the analysis. I also remove schools from Jammu and Kashmir, where the policy was not implemented, and Sikkim, where there was no official definition of disadvantaged groups available.

Data collected under DISE is self-reported by schools, and submitted by the school head teacher. However, the data is checked<sup>9</sup> for inconsistencies at multiple stages by the district and state level authorities before it is published. DISE is currently the largest, centralized database of all registered/recognized schools in India. Figures 1-3 show some descriptive evidence from DISE. Since the RTE Act was implemented in August 2009, any effect of the policy would reflect in the academic year starting in April 2010 (2010-11).<sup>10</sup> So, a vertical line has been drawn between the academic years 2009-10 and 2010-11 to capture the timing of the policy.

The number of schools has increased over time across both school categories (Figure 1). However, I observe that total enrolment in grade 1 has sharply declined in government schools as opposed to private schools, where enrolment has increased over time (Figure 2). This is consistent with the existing literature that has observed a shift away from government schools to private schools at the primary and upper primary levels (Krishna et al. 2017, Bhattacharjee 2019, Kingdon 2020). Moreover, the decline in government school enrolment is larger than the increase in the number of government schools. As a result, the average enrolment in grade 1, which is equal to the ratio of total enrolment in grade 1 to the total number of schools, has seen a steep decline in government schools (Figure 3). Compared to that, the average enrolment in grade 1 in private schools has remained quite stable.

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<sup>9</sup>For further information on how the data is checked see: <http://schoolreportcards.in/src-new/AboutDISE/Reliability.aspx>

<sup>10</sup>A school year in India starts in April and ends in March of the following year.

Figure 1. Number of schools (in thousand)

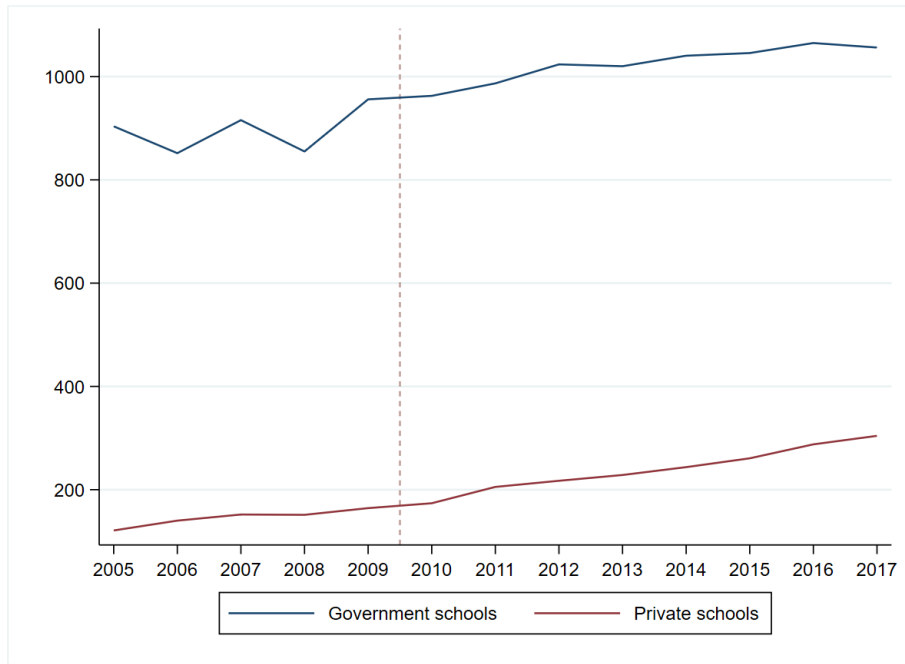


Figure 2. Total enrolment in grade 1 (in million)

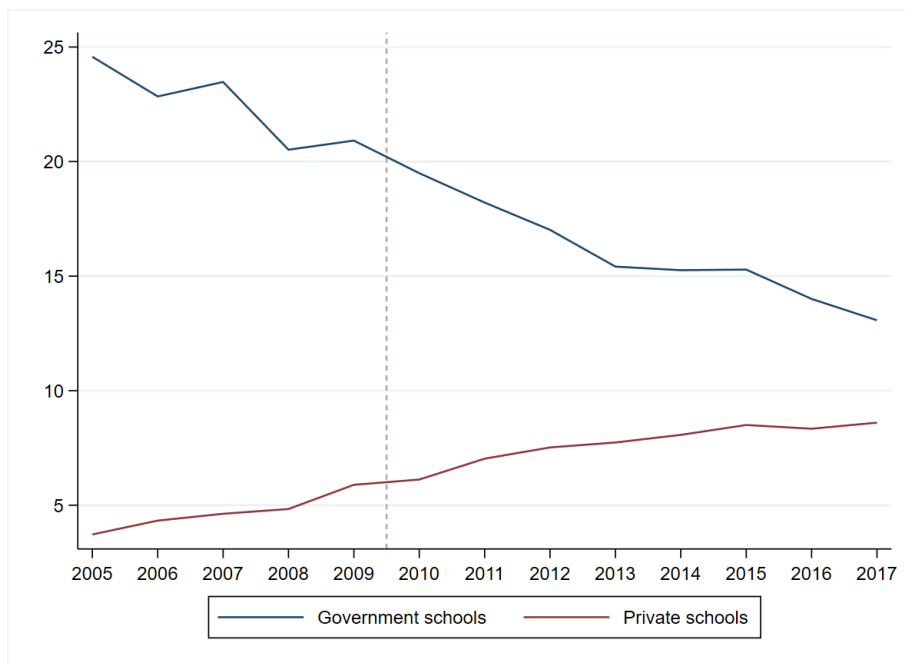


Figure 3. Average enrolment in grade 1

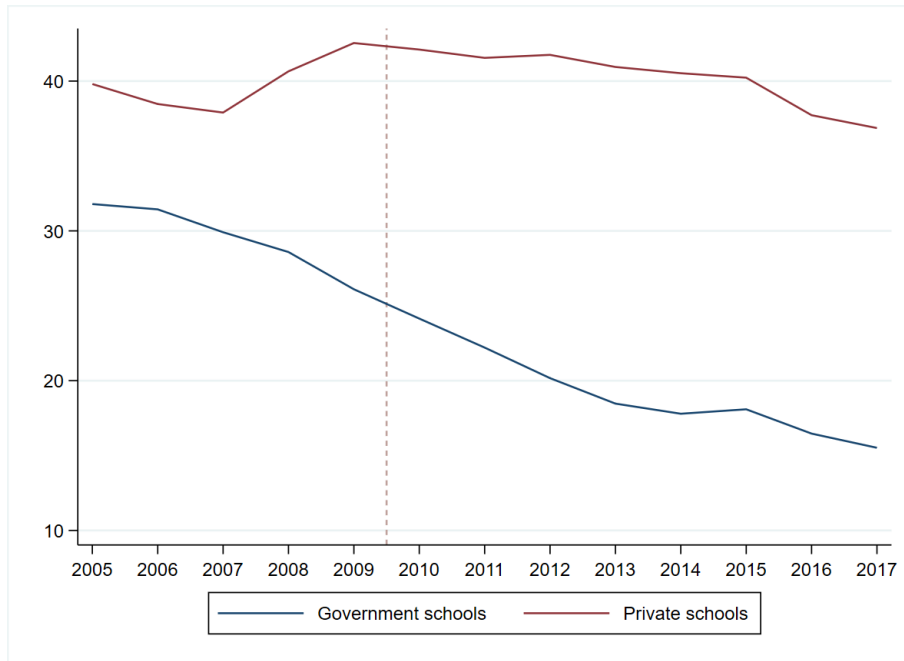
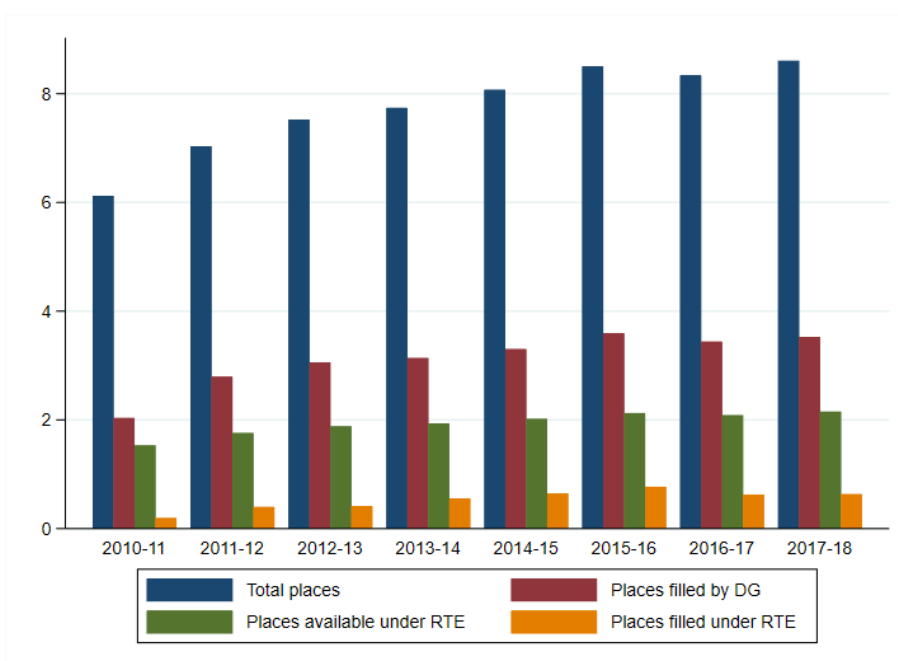


Figure 4 shows that in 2010, private schools in India filled around 6 million places in grade 1 (total enrolment). Out of these, around 2 million places were filled by disadvantaged groups. In other words, 33% of seats in grade 1 were filled by children who were eligible under RTE's reservation policy. As the RTE Act required private schools to offer at least 25% of all places in grade 1 for free to disadvantaged groups and economically weaker sections, I calculate the total available places under RTE as 25% of total places in grade 1 in private schools. Figure 4 shows that in the year 2010, at least 1.5 million places were available under the policy, of which only around 500 thousand places were filled. Moreover, despite enrolling 2 million disadvantaged children who were eligible, private schools offered less than 500 thousand free places to them under the policy. I do observe that the number of places filled under RTE increased over time, albeit slowly.

Figure 4. Places in grade 1 in private schools (in million)



Notes: 'Places available under RTE' is calculated as 25% of total places. 'Places filled under RTE' is the enrolment under the reservation policy as a percentage of total places. 'Places filled by DG' is the percentage of total places filled by all disadvantaged groups.

At the state level, I compare the proportion of RTE schools and the proportion of places filled under RTE. 'RTE schools' are defined as those private schools which reported to have enrolled at least 1 student under the reservation policy in any year after 2009. Non-RTE schools are those that reported to have never enrolled any student under the policy after 2009. Figure 5 shows the number of RTE schools as a proportion of the total number of private schools in the largest 20 states of India. The values are averaged over a period of 8 years (from 2010-11 to 2017-18). I find that in Rajasthan, Tamil Nadu and Madhya Pradesh, more than 80% private schools were RTE schools. This was followed by Uttarakhand and Chhattisgarh, where almost 70% of private schools on average were RTE schools. In states such as Jharkhand, Uttar Pradesh, Meghalaya and Andhra Pradesh, less than 20% of private schools had any RTE enrolment on average.

In terms of the average proportion of places filled under RTE's reservation policy, Madhya Pradesh surpassed all other states by filling more than 60% of all available places (Figure 6).<sup>11</sup> In contrast, states such as Andhra Pradesh, Uttar Pradesh and Jharkhand, left more than 90% of available places unfilled.

<sup>11</sup> Average proportion of places is the proportion of places filled under the reservation policy in grade 1, averaged across 8 years. The required proportion is at least 0.25.

Figure 5. Average proportion of RTE schools in largest 20 states (2010-2017)

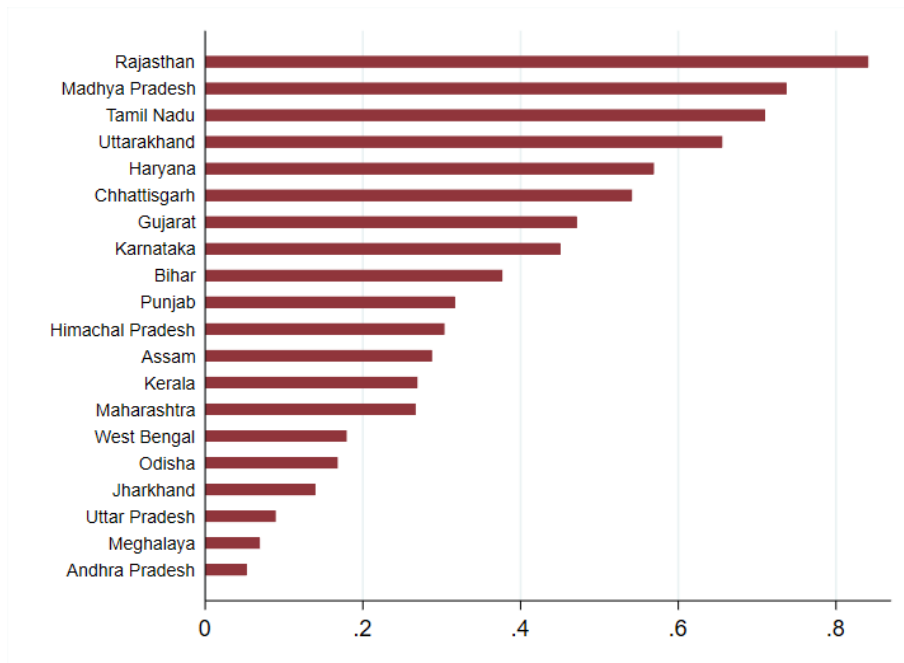
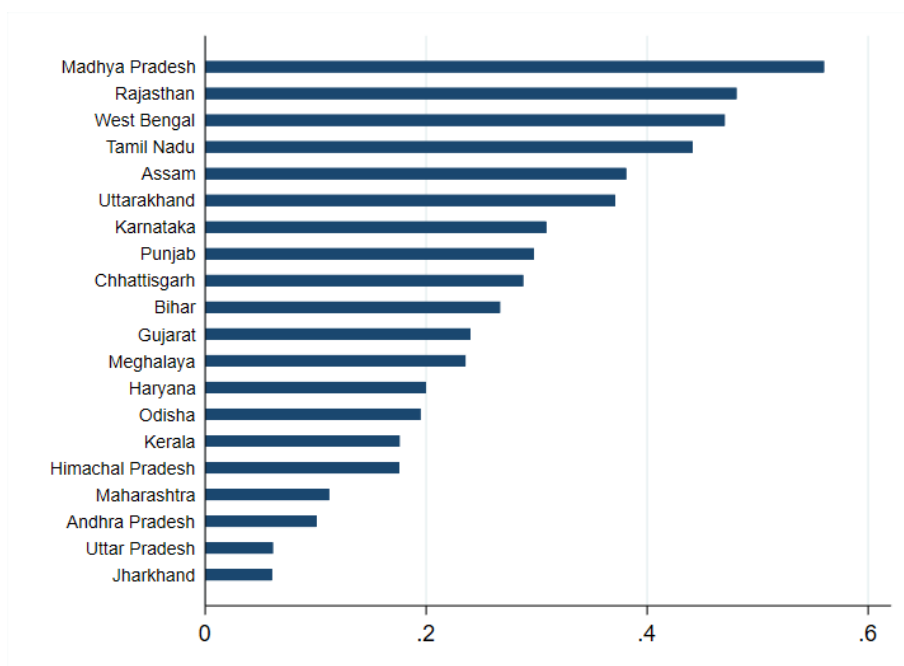


Figure 6. Average RTE enrolment as a proportion of available places in largest 20 states (2010-2017)





## **4 Response to the reservation policy: A comparison of schools**

As the RTE Act's reservation policy mandates subsidized private education for disadvantaged groups, it should in principle increase private school enrolment, especially given the high demand for private education. As the price gap narrows between government and private schools, some disadvantaged families might view private schools as a more attainable substitute for government schools. To study how the enrolment of disadvantaged groups changed with the introduction of the RTE Act, I first compare the trends in enrolment across both government and private schools in Section 4.1. I show that enrolment of disadvantaged children in private schools increased post-RTE and was accompanied by a decline in their enrolment in government schools.

To attribute the increasing enrolment in private schools to the reservation policy, it is essential to delve deeper into the private school sector itself. So, in Section 4.2, I compare the trends in the enrolment of disadvantaged children across schools participating in the reservation policy and schools not participating. If schools participating under the policy show a remarkably different trend in the enrolment of disadvantaged children, it lends credibility to the policy's direct impact.

Even if participating schools did increase the enrolment of disadvantaged children, the overall success of the policy depends on the number of schools participating. Many private schools, however, did not enroll any students under the reservation policy (Sarin et al. 2015). There are various reasons why some private schools opt not to participate in the policy, with financial incentives being a potential major deterrent. According to the policy's rules, private schools with fees exceeding the government's per-child expenditure only receive reimbursement equivalent to that expenditure, rather than their actual fees (see page 7). This setup might discourage 'high-fee' private schools from participating, as they would be unable to recover their full costs. Similarly, 'low-fee' private schools, which charge fees that are below or on par with the government's per-child expenditure, might have little financial incentive to participate. These schools would only be reimbursed an amount they already charge (presumably low), which does not provide a significant benefit.

Moreover, if private schools were already admitting disadvantaged children up to the stipulated 25% quota, they might have little incentive to offer those seats for free under the policy. This is especially true if the financial costs of participating in the policy outweigh the benefits. Indeed these schools were previously filling those seats with disadvantaged children who were paying fees. These schools might also not increase the total number of seats for disadvantaged children as an expansion of seats requires additional resources and infrastructure. Additionally, increasing the proportion of disadvantaged students might not appeal to parents from non-disadvantaged groups which

might potentially affect the reputation of private schools. I investigate this in Section 4.3.

While understanding the trends in the enrolment numbers of disadvantaged groups across different school types provides a broad picture, it might not convey the complete story. A more refined approach is to compare the trends in the average share, which is the proportion of enrolment of the disadvantaged groups relative to the total enrolment. There might be an increase in pure enrolment numbers, but if the overall school population grows at a faster rate, disadvantaged groups' share might still be declining. Moreover, an increasing share indicates not just increased enrolment, but that the growth rate of enrolment of the disadvantaged groups is higher than that of non-disadvantaged groups.

For comparison of disadvantaged children's enrolment trends, I focus on grade 1, which is the typical entry point for primary education. Following RTE, private schools were mandated to reserve seats specifically at this entry level. Once students secured these reserved spots, they would then continue their schooling in subsequent grades without the need for further reservations. The pre-RTE period means all academic years from 2005-06 to 2009-10, while post-RTE period means all academic years from 2010-11 to 2014-15 such that the enrolment is averaged over a period of 5 years.

## **4.1 Government vs private schools**

At the national level, government schools on average are enrolling fewer children in grade 1 in the post-RTE period relative to the pre-RTE period (Table 2). However, the average share of disadvantaged groups, which is the ratio of the enrolment of disadvantaged groups to enrolment of all children in grade 1, is increasing in government schools. This is because the decline in the enrolment of disadvantaged groups is less than the decline in total enrolment.

In private schools, despite the increase in the number of schools, the average enrolment in grade 1 remains more or less the same in the post-RTE period. In fact, the average enrolment increases for disadvantaged groups. This means school size has not increased in private schools but per school, there are more disadvantaged children after RTE. As a result, the average share of disadvantaged groups also increases. However, this cannot be taken as evidence of the effect of the reservation policy because the trends in the enrolment of disadvantaged groups between private and government schools were different even before RTE (see Figure A.1).

Table 2. Enrolment in grade 1 in government and private schools

	Pre-RTE	Post-RTE
<b>Government schools</b>		
Average enrolment	29.63	20.80
Average enrolment of disadvantaged group	18.59	13.99
Average share of disadvantaged group	0.61	0.65
Observations	3,407,045	3,719,140
<b>Private schools</b>		
Average enrolment	40.15	40.71
Average enrolment of disadvantaged group	15.88	18.03
Average share of disadvantaged group	0.38	0.43
Observations	538,611	794,277

Notes: Haryana, Mizoram, Tamil Nadu do not enrol SC, ST, OBC or children with special needs under RTE. Jharkhand, Meghalaya and Tripura only include SC and ST from BPL families. No official definition of disadvantaged group is available for Sikkim. Schools from these states are therefore, excluded.

Given the heterogeneity across Indian states in terms of the reimbursement rates, and participation and enrolment under the reservation policy, it is important to see what happened at the state level. Therefore, I measure the changes in the average enrolment and share of disadvantaged groups between pre and post-RTE periods in the largest 20 states of India. In all 20 states, there is a positive change in the average enrolment of disadvantaged groups in private schools (Figure 7). In government schools, the change in the average enrolment of disadvantaged groups is negative in all states.

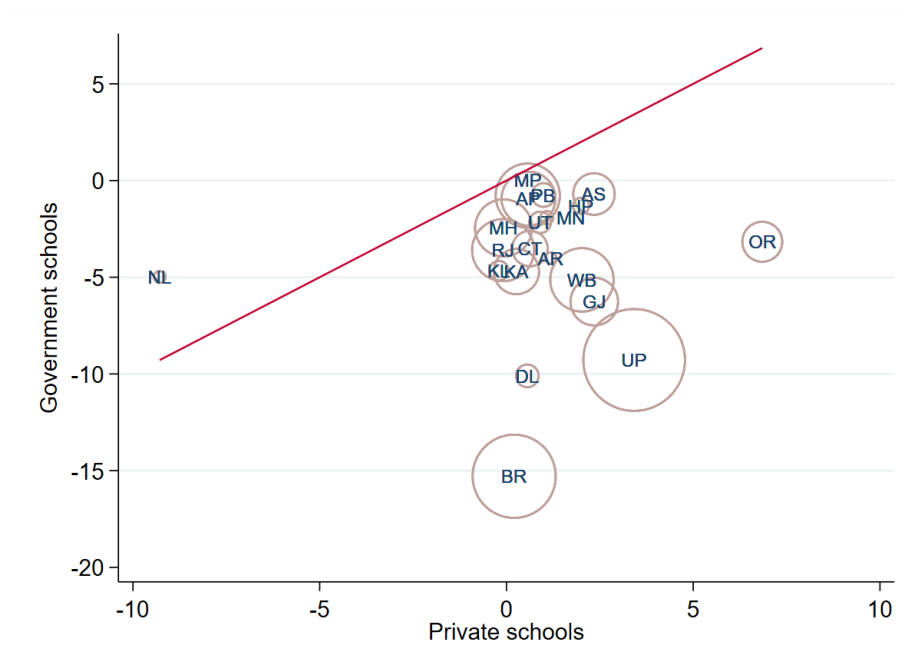
Furthermore, Figure 8 shows that there is a strong correlation between the change in the average share of disadvantaged groups in government schools and that in private schools. Most states that witnessed an increase in the share of disadvantaged groups in private schools witnessed a similar increase in their share in government schools. This could be because the decrease in government school enrolment was larger among non-disadvantaged groups, such that the share of disadvantaged groups actually increased despite a decrease in their enrolment numbers. Whereas in private schools, the increased share of disadvantaged groups can be attributed to their increased enrolment. The change in the share of disadvantaged groups is also more spread out across states. This can be explained by the large variation in the change in the average enrolment of all children across states, as shown in Figure 9.

The state-level trends are similar to the national-level trends for most states. The average enrolment of disadvantaged groups post-RTE increases in private schools and decreases in government schools, while the average share increases across both categories in most states. Figure A.2 shows the population of children aged 6 from SC and ST categories as a percentage of the total SC, ST population in the top 20 states. I ob-

serve that in almost all states, the population of these children, who would potentially be enrolled in grade 1, decreases between 2001 and 2011. However, the percentage of these children attending schools increases between 2001 and 2011 in all states except Andhra Pradesh, Delhi, Kerala and Rajasthan (Figure A.3). This means that an increase in the enrolment of SC/ST children is not due to a higher share of 6 years olds. It is in fact because there are fewer SC/ST out-of-school children.

A large number of children in India are also enrolled in unrecognized private schools which are not included in DISE. At the same time, there are many children enrolled in private aided<sup>12</sup> schools. When I examine the enrolment data from National Sample Survey of India, I find that about 10% of primary school-aged children were enrolled in private-aided schools in 2014-15. However, I do not consider private-aided schools in my paper. Therefore, even though the number of schools has been increasing and more children are attending schools than before, the overall enrolment is still under reported in Table 2.

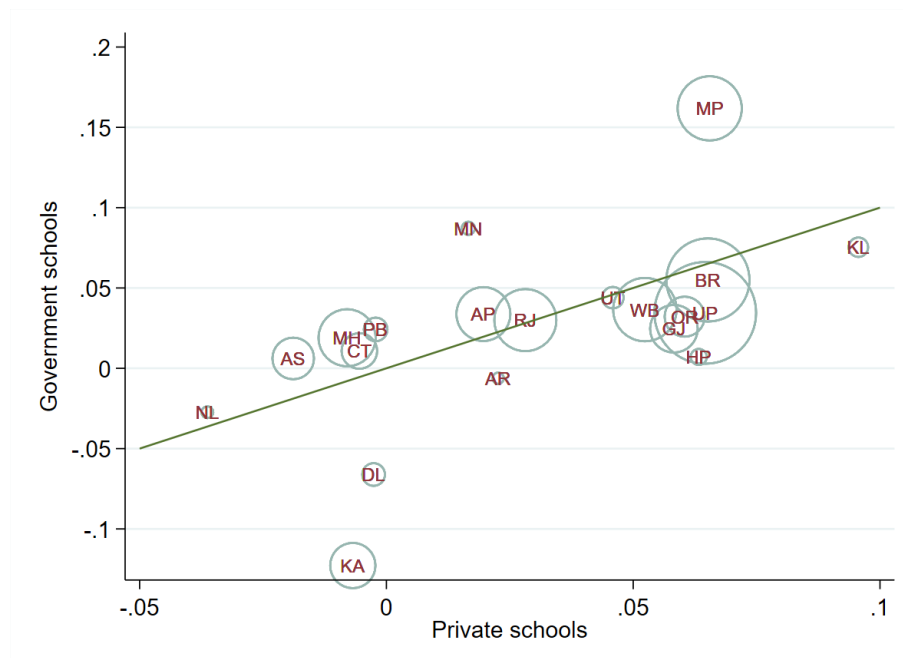
Figure 7. Change in the average enrolment of disadvantaged groups across government and private schools



Note: The numbers are weighted by the total primary enrolment in each state. So a larger bubble implies a larger state.

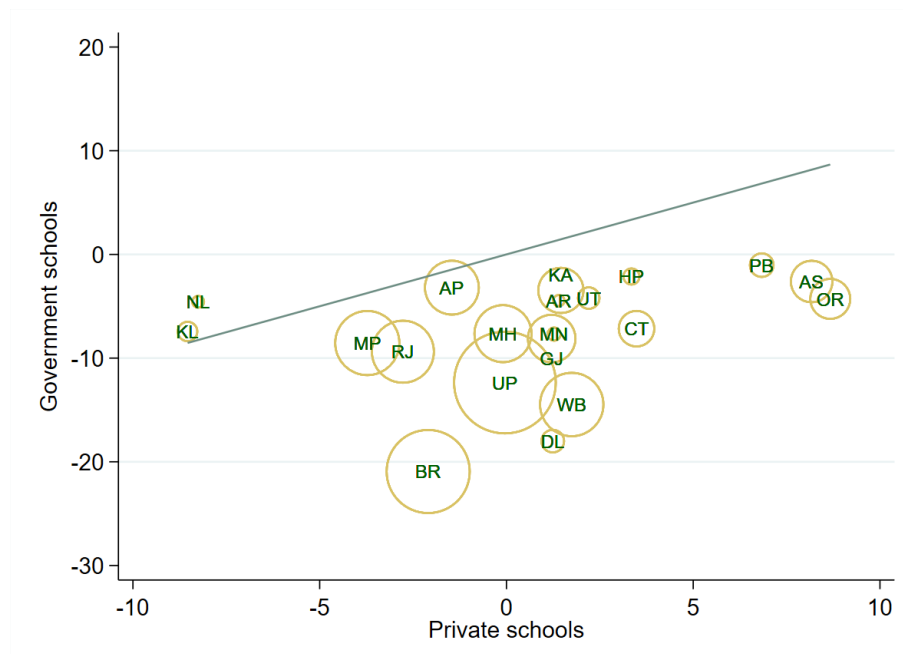
<sup>12</sup>Private-aided schools are partly funded by the government and partly managed by a private committee of individuals.

Figure 8. Change in the average share of disadvantaged groups across government and private schools



Note: The numbers are weighted by the total primary enrolment in each state. So a larger bubble implies a larger state.

Figure 9. Change in the average enrolment of all children across government and private schools



Note: The numbers are weighted by the total primary enrolment in each state. So a larger bubble implies a larger state.

Private schools have clearly outperformed government schools in terms of increasing the enrolment of disadvantaged groups after the RTE Act. This is in spite of free government school education. Studies on private schooling in India have observed an

upward trend in private school enrolment predominantly for children from socially and economically better-off families. Based on my findings, post the implementation of the RTE Act, even disadvantaged children showed a similar shift towards private schools. However, the shift from government to private schools was stronger among the non-disadvantaged groups, which explains why the share of disadvantaged groups increases in government schools despite a decline in the enrolment.

## **4.2 RTE vs non-RTE schools**

In this section, I compare the changes in the average enrolment and average share of disadvantaged groups in RTE and non-RTE schools within the private sector. RTE schools are defined as those private schools which reported to have enrolled at least 1 student under the reservation policy in any year after 2009. Non-RTE schools are those that reported to have never enrolled any student under the policy after 2009. I find that 39% of private schools are RTE and 61% of schools are non-RTE in the data. This means that 61% of all private schools reported no enrolment under the reservation policy even 7 years after its implementation.

Table 3 reports the change in the average enrolment and share of disadvantaged groups in RTE and non-RTE schools. Private schools which are present only in the pre-RTE period or only in the post-RTE period have been removed for consistency. However, a complete version with all schools is given in Table A.1, which shows similar results. In RTE schools, the average enrolment of all children in grade 1 is almost the same in the post-RTE period but the average enrolment of disadvantaged groups increased (Table 3). Subsequently, their share also increased. In non-RTE schools, the average enrolment of all children in grade 1 increased in the post-RTE period, and the increase is in fact higher for disadvantaged groups. As a result, their share also increased. The increase in both enrolment and share is higher in non-RTE schools, which suggests that the increased enrolment of disadvantaged groups in private schools was not driven by the reservation policy.

Table 3. Enrolment in grade 1 in RTE and non-RTE schools

	Pre-RTE	Post-RTE
<b>RTE schools</b>		
Average enrolment	36.81	36.49
Average enrolment of disadvantaged groups	12.33	13.52
Average share of disadvantaged groups	0.32	0.37
Observations	176,433	247,669
<b>Non-RTE schools</b>		
Average enrolment	44.54	46.23
Average enrolment of disadvantaged groups	19.79	23.29
Average share of disadvantaged groups	0.43	0.50
Observations	266,936	259,340

Notes: Haryana, Mizoram, Tamil Nadu do not enrol SC, ST, OBC or children with special needs under RTE. Jharkhand, Meghalaya and Tripura only include SC and ST from BPL families. No official definition of disadvantaged groups is available for Sikkim. Schools from these states are therefore excluded.

On comparing the change in the average enrolment of disadvantaged groups in RTE and non-RTE schools in the top 20 states, I find that the trend is very similar across both categories. In Figure 10, the majority of the states are close to the 45-degree line. Figure 10 suggests that the increase in average enrolment of disadvantaged groups is not systematically higher in schools that participated in the reservation policy.

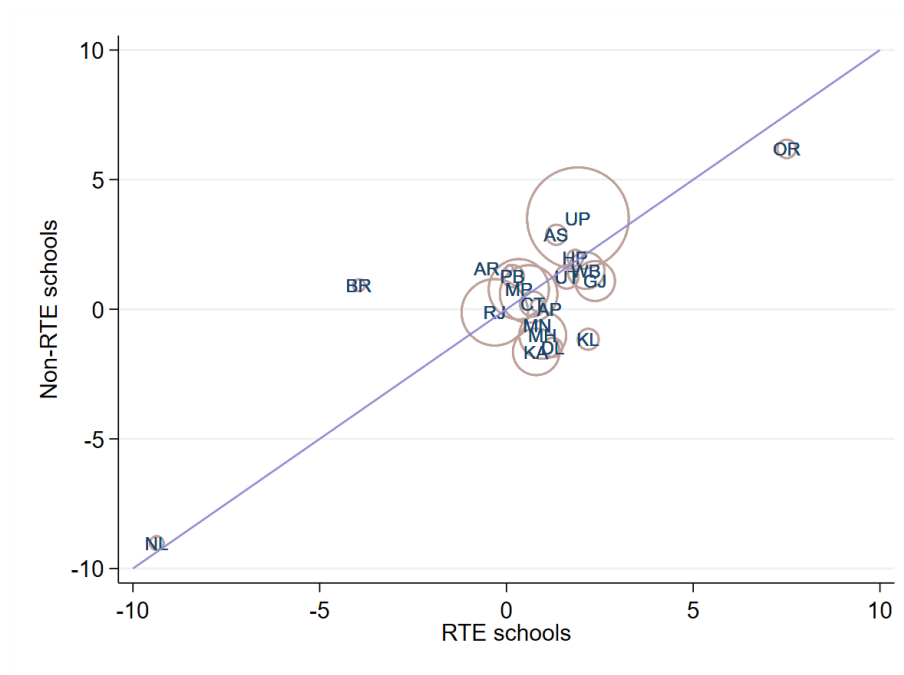
Table A.2 reports the average enrolment of disadvantaged groups in the pre and post-RTE periods as well the change in each of the 20 states. In states such as Delhi, Karnataka and Maharashtra, the average enrolment of disadvantaged groups increased in RTE schools but declined in non-RTE schools. In Gujarat, Odisha, Uttarakhand and West Bengal, the average enrolment of disadvantaged groups increased in both RTE and non-RTE schools but the increase was higher in RTE schools. In contrast, Assam and Uttar Pradesh witnessed a higher increase in the average enrolment of disadvantaged groups in non-RTE schools. In Bihar, Kerala and Manipur, there was no change in the average enrolment of disadvantaged groups in RTE and non-RTE schools as shown in Table A.2.

The increase in the average share of disadvantaged groups is higher in RTE schools compared to non-RTE schools in states such as Gujarat, Himachal Pradesh, Odisha and West Bengal (Figure 11). In Chhattisgarh and Manipur, the average share increases in RTE schools but falls in non-RTE schools. Table A.3 reports the average share of disadvantaged groups in the pre and post-RTE periods and the difference in all 20 states. In states such as Assam, Bihar, Delhi and Karnataka, the increase in the average share of disadvantaged groups in RTE schools is insignificant.

Compared to the enrolment of disadvantaged groups, the change in their average share in RTE and non-RTE schools is more scattered across states (Figure 11). This is due to the fact that the change in the average enrolment of all children in grade 1 is drastically different across states (Figure 12). However, the majority of the states witness a one-to-one change in the average enrolment of all children across both categories of schools. In the remaining states, the increase in the share of disadvantaged groups is almost equal between RTE and non-RTE schools.

Gujarat, Odisha and West Bengal are the only three states where RTE schools outperformed non-RTE schools in terms of both increased enrolment and share of disadvantaged groups. Even in the states of Madhya Pradesh and Rajasthan, where the proportion of RTE schools was the highest, RTE schools had a relatively lower average share of disadvantaged groups post-RTE. In Delhi, Karnataka and Maharashtra, while the average enrolment of disadvantaged groups increased in RTE schools only, the average share did not. This is because, in these states, the increase in average enrolment of all children was higher than the increase in the enrolment of disadvantaged groups (Figure 12).

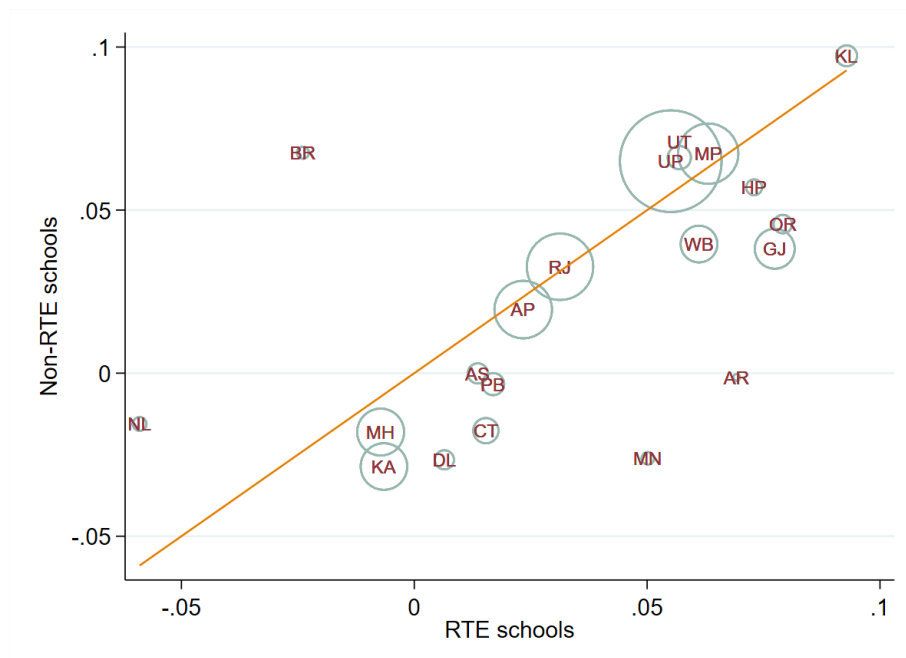
Figure 10. Change in the average enrolment of disadvantaged groups across RTE and non-RTE schools



Note: The numbers are weighted by the total primary enrolment in each state. So a larger bubble implies a larger state.

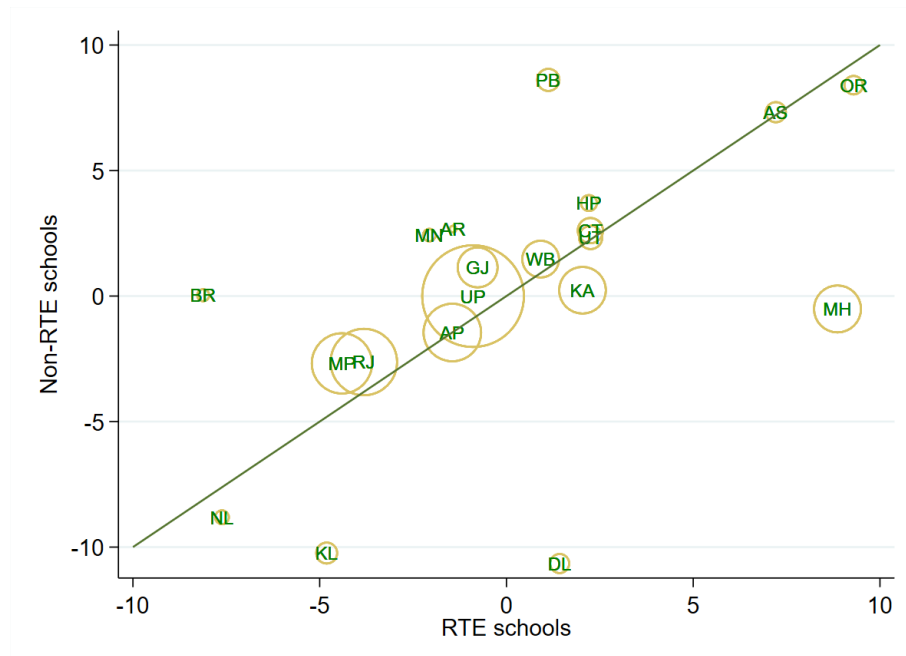


Figure 11. Change in the average share of disadvantaged groups across RTE and non-RTE schools



Note: The numbers are weighted by the total primary enrolment in each state. So a larger bubble implies a larger state.

Figure 12. Change in the average enrolment of all children across RTE and non-RTE schools



Note: The numbers are weighted by the total primary enrolment in each state. So a larger bubble implies a larger state.

Results show that the increased private school enrolment of disadvantaged children did not just pertain to schools enrolling students under the reservation policy. In fact, the increase was larger in schools that did not enrol any student under the policy. This suggests that subsidized private education did not drive the increased private school enrolment of disadvantaged children post-RTE.

### **4.3 Schools above 25% quota vs schools below 25% quota**

The increase in enrolment of disadvantaged children in private schools could have been a result of a surge in demand from disadvantaged groups who had the means to pay the fees. However, the success of these groups securing admission in private schools depends on the availability of places. Private schools with a pre-existing high share of disadvantaged children might find little reason to significantly expand their intake post the RTE Act.

A striking observation is that even before the RTE Act was implemented, on average, nearly 40% of places in grade 1 were filled by disadvantaged groups in private schools (Figure 13). Since all children belonging to disadvantaged groups are eligible for free places under the reservation policy, if private schools were already meeting the 25% cut-off, they might not have a financial incentive to enrol these children for free. In fact, they might have a disincentive to do so if their per-child fee is lower than the reimbursement rate set by the government (see page 7). Therefore, in principle, after 2009, the share of disadvantaged groups in grade 1 would not increase much in schools that enrolled at least 25% students from disadvantaged groups in the pre-RTE period.

To better understand these dynamics, I classify private schools based on their share of disadvantaged children relative to the 25% quota before the RTE Act. Specifically, I compare the enrolment trends of disadvantaged children between two categories of schools: those that had already met the 25% quota and those that were below this benchmark.

Figure 13. Average share of disadvantaged groups in grade 1

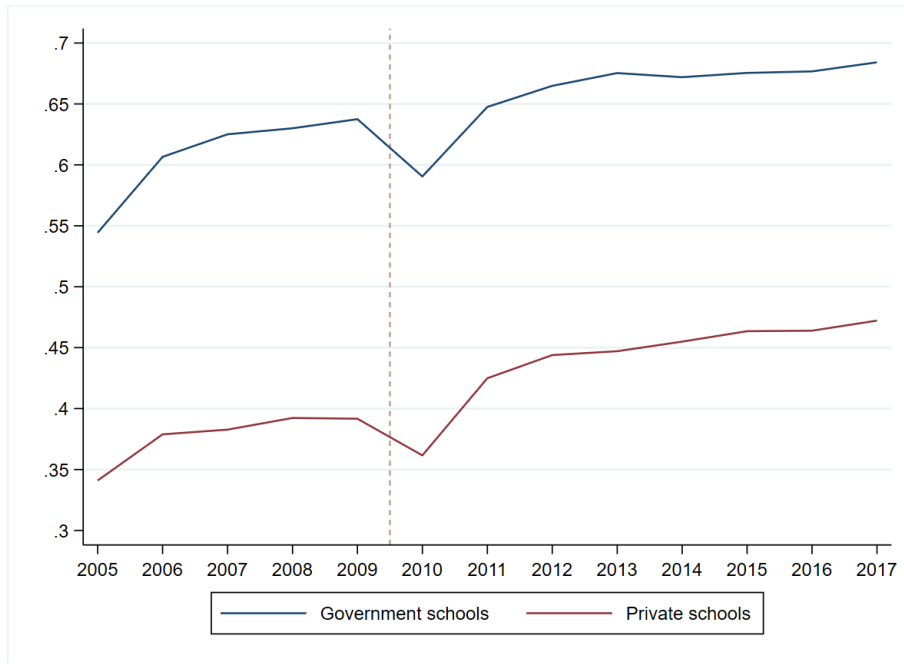


Table 4 shows the change in enrolment in grade 1 in private schools above and below the 25% quota. I define schools above the quota to be those that had at least 25% disadvantaged children in grade 1 in any year before 2010, while schools below the quota had less than 25% disadvantaged children in all years before 2010. Schools that exist only in the pre-RTE period or only in the post-RTE period have been removed. I observe that in schools below the quota, there is a 15 percentage points increase in the share of disadvantaged groups in the post-RTE period, whereas, in schools above the quota, the increase in the share is only 3 percentage points.

Table 4. Private school enrolment in grade 1 based on the pre-RTE share of disadvantaged groups

	Pre-RTE	Post-RTE
<b>More than 25%</b>		
Average enrolment	41.08	40.96
Average enrolment of disadvantaged groups	22.31	23.75
Average share of disadvantaged groups	0.52	0.55
Observations	318,777	336,141
<b>Less than 25%</b>		
Average enrolment	42.46	42.45
Average enrolment of disadvantaged groups	2.79	8.39
Average share of disadvantaged groups	0.06	0.21
Observations	124,592	173,225

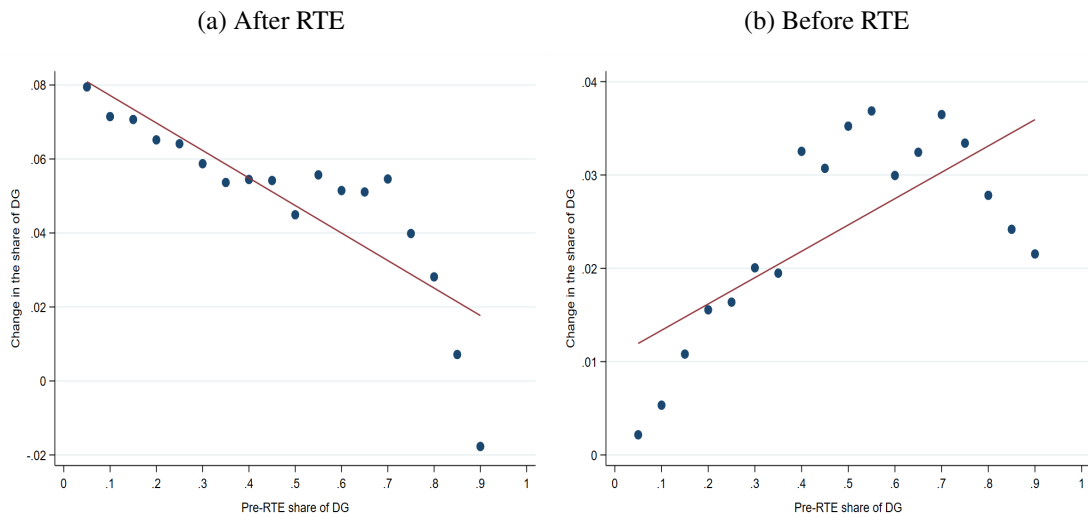
Notes: Haryana, Mizoram, Tamil Nadu do not enrol SC, ST, OBC or children with special needs under RTE. Jharkhand, Meghalaya and Tripura only include SC and ST from BPL families. No official definition of disadvantaged groups is available for Sikkim. Schools from these states are therefore excluded.

From Table 3 it is clear that the reservation policy was not directly responsible for the increase in the enrolment of disadvantaged groups in private schools. However, the descriptive evidence in Table 4 suggests that schools that had a low pre-RTE share of disadvantaged groups did offer relatively more places to these children following the implementation of the policy.

This is true even when I divide the schools into narrower intervals based on their pre-RTE share of disadvantaged groups (Figure 14a). I find that there exists a monotonic negative correlation between the pre-RTE share of disadvantaged groups and the change in their post-RTE share. In schools with 10% disadvantaged children in the pre-RTE period, the share increased by around 8 percentage points in the post-RTE period. Whereas, in schools with a pre-RTE share of 85%, the share increased by only 1 percentage point in the post-RTE period.

To see if this negative correlation existed in the years before RTE, I look at the change in the share of disadvantaged groups first between 2005 and 2007 (Figure 14b), and then between 2007 and 2009 (Figure A.4). In both figures, I find that a lower pre-RTE share of disadvantaged groups is associated with a lower increase in this share upto a certain point, after which the relationship is non-linear. This implies that before the RTE Act was implemented, schools that offered relatively fewer places to disadvantaged children, continued to offer them fewer places. Whereas, after the policy was implemented, they offered them relatively more places compared to schools that admitted more of these children before the policy.

Figure 14. Change in the share of disadvantaged groups



Notes: The x-axis denotes the average share of disadvantaged groups in schools from 2005 to 2009. Figure 14a shows the average change in the share from 2005 to 2014 on the y-axis, while Figure 14b shows the average change in the share from 2005 to 2007 on the y-axis.

I find that the increase in the enrolment of disadvantaged children was largely in private schools that were below the 25% quota before RTE was implemented. This means that schools that already catered to a significant portion of disadvantaged children prior to the policy's enactment did not see a marked increase in their enrolment.

#### 4.4 General equilibrium effects

Private schools' response to the RTE reservation policy could also be largely influenced by the availability of government schools and other private schools nearby. A major provision of the RTE Act was the construction of government schools in areas where no such school previously existed. As seen in Figure 1, there has been a steady increase in the number of government and private schools post-RTE. Therefore, the availability of new schools in close proximity could significantly impact the dynamics of school enrolment and the ability of private schools to meet the stipulated quota for disadvantaged groups under the reservation policy.

The opening of new schools, both government and private, increases competition and school choice for families. This could lead to a redistribution of students across schools. If new schools are more attractive or conveniently located, they may draw students away from existing schools, thus affecting those schools' ability to meet quotas. Subsequently, if the pool of disadvantaged groups is now distributed among a larger number of schools, individual private schools may struggle to enroll enough eligible students to meet the quota.

Additionally, the construction of new private schools could draw students away from

government schools. If new private schools are perceived as high-quality, they might attract more students, including those from disadvantaged backgrounds who would otherwise attend government schools. However, if there are many private schools within close proximity, increased school choice could result in some seats remaining unfilled in individual private schools under the reservation policy. On the other hand, if there are only a few private schools nearby competing with existing government schools, there could be oversubscription to free seats under the reservation policy. This could result in many disadvantaged students not getting a free seat under the policy and ending up in government schools.

The opening of new schools also involves resource allocation and infrastructure development. In areas where resources and infrastructure are limited, the opening of new schools could strain these resources further, impacting the quality of education and the ability of schools to meet quotas. Furthermore, economic factors such as the ability of families to afford private school fees or the availability of transportation to schools, also plays a crucial role in determining which schools children attend.

The general equilibrium effects of the construction of new government and private schools on the implementation of quotas is multifaceted and highly dependent on local contexts, including the number and quality of schools, demographic factors, and socio-economic conditions. This complexity necessitates careful planning by policymakers and continuous monitoring by government authorities to ensure that the RTE Act's reservation policy achieves its intended goals.

## **5 Effect of RTE on the share of disadvantaged groups**

Analyzing the post-RTE trends, it becomes evident that private schools, which were previously under the stipulated quota, witnessed a noticeable increase in the enrolment and share of disadvantaged children. However, merely examining these trends does not conclusively establish the RTE Act's role in enhancing primary school enrolment of disadvantaged children.

To get a more robust understanding of RTE's impact, I incorporate a difference-in-differences model that compares the share of disadvantaged children in schools previously below the 25% quota with those above it, both before and after RTE's implementation. I hypothesise that schools that were already at the 25% quote had no incentive to make free places available, whereas those with lower disadvantaged enrolment were more likely to offer free places to meet the quota.

I first include state fixed effects in the model which accounts for a large number of time-invariant unobservables that are constant within a state. This controls for the variation in the implementation of the RTE Act across states. Then I include school

fixed effects, which account for certain time-invariant characteristics specific to schools, making the estimates more consistent and reliable. It also focuses the analysis on within-school changes, offering a clearer picture of RTE's impact.

I further incorporate a triple-difference model comparing changes differentially between schools participating and not participating in the reservation policy. This model offers a more granular perspective, shedding light on whether the increased enrolment in schools previously below the quota was directly influenced by the reservation policy.

## **5.1 A difference-in-differences estimation**

To find stronger evidence of the role of the RTE Act in increasing the share of disadvantaged groups, I first use a difference-in-differences strategy. I define the 'treatment' group as private schools that enrolled less than 25% students from disadvantaged groups in all years before 2010 (schools below the quota). The 'control' group includes private schools that enrolled at least 25% students from disadvantaged groups in any year before 2010 (schools above the quota).

As shown in Table 4, the average number of students enrolled in grade 1 across both groups is quite close. In fact, there is no significant change in the average enrolment in both groups post-RTE. So, schools that enrolled at least 25% students from disadvantaged groups in the pre-RTE period is a plausible control group. I find that 34% of schools in the sample are in the treatment group and 66% of schools are in the control group.

The baseline characteristics of the treatment and control group are shown in Table 5. Schools in the control group were 8 percentage points more likely to be in rural areas compared to treatment schools before RTE. This makes sense as the control group had a higher share of disadvantaged children, many of whom live in rural areas. The average school size, which is measured by the number of students enrolled in grades 1-8, was not very different across both groups. However, the treatment group was more likely to have upper primary (1-8) and higher secondary grades (1-12). Furthermore, schools in the treatment group were more likely to have pre-primary grades.

Table 5. Baseline characteristics of the Treatment and Control groups

	Treatment	Control	Difference
<b>Area</b>			
Rural	0.57	0.66	-0.08 (0.002)
Average school size	218	211	7 (0.677)
<b>School category</b>			
Lower primary only	0.41	0.52	-0.12 (0.002)
Up to Upper primary	0.42	0.37	0.04 (0.002)
Up to Higher secondary	0.17	0.10	0.07 (0.001)
<b>Pre-primary grades</b>			
Available	0.43	0.31	0.12 (0.002)

Notes: Mean values are averaged over 5 years (2005-2009). Results are based on a paired sample t-test. Standard errors of the differences are reported in parentheses.

First, I undertake a simple difference-in-differences estimation to see if the post-RTE share of disadvantaged groups significantly increased for the treatment group. I estimate the following model:

$$SDG_{iy} = \beta_0 + \beta_1(DG < 25p)_i + \beta_2 Post_y + \beta_3(DG < 25p)_i \cdot Post_y + \beta_4 X_{iy} + \alpha_i + \varepsilon_{iy} \quad (1)$$

$SDG_{iy}$  is the share of disadvantaged groups in grade 1 in private school  $i$  and academic year  $y$ .  $(DG < 25p)_i$  is the treatment dummy that equals 1 for schools that enrol less than 25% students from disadvantaged groups in grade 1 in the pre-RTE period.  $Post_y$  is a dummy variable that equals 1 for the post-RTE period.  $(DG < 25p)_i \cdot Post_y$  is the interaction dummy, such that the coefficient  $\beta_3$  captures the difference-in-differences effect.  $X_{iy}$  is the vector of control variables,  $\alpha_i$  captures the state/school fixed effects and  $\varepsilon_{iy}$  is the error term.

The results are presented in Table 6. Column (1) is the simple difference-in-differences model that is equivalent to the result in Table 4. The increase in the share of disadvantaged groups in the post-RTE period was more in the treatment group by 12 percentage points compared to the control group. Even after including control variables and state dummies (column 3), the DID estimate remains positive and significant, although the magnitude becomes slightly smaller.



In column (4), I estimate a model with school fixed effects where estimates show the variation within private schools over time. Therefore, time in-varying factors including the treatment dummy drop out because the treatment status is fixed for each school across the two time periods. The coefficient on the interaction term becomes even smaller but remains positive and highly significant. I find that the increase in the share of disadvantaged groups in the post-RTE period was 6 percentage points more in the treatment group compared to the control group.

Table 6. Effect of RTE on the share of disadvantaged groups

VARIABLES	(1)	(2)	(3)	(4)
DG<25p	-0.454*** (0.002)	-0.428*** (0.002)	-0.285*** (0.002)	
Post	0.032*** (0.001)	0.043*** (0.001)	0.026*** (0.001)	0.017*** (0.001)
$(DG < 25p) \times Post$	0.116*** (0.002)	0.114*** (0.002)	0.092*** (0.002)	0.061*** (0.001)
Constant	0.517*** (0.002)	0.515*** (0.004)	0.232*** (0.009)	0.362*** (0.004)
Observations	952,715	946,199	946,199	946,217
R-squared	0.27	0.30	0.47	0.71
Controls	No	Yes	Yes	Yes
State FE	No	No	Yes	No
School FE	No	No	No	Yes

Notes: Dependent variable is the share of disadvantaged groups in grade 1. Control variables included are dummies for rural/urban, school size, school category (primary, upper primary etc.) and availability of pre-primary grades. Standard errors are clustered at the village level in columns 1-3 and at the school level in column 4. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 5.2 A triple difference estimation

While there is evidence to believe that the RTE Act encouraged some schools to offer more places to disadvantaged children, to see if the increase in their share is driven by the reservation policy, I compare the treatment effect between RTE and non-RTE schools. RTE schools enrol at least 1 student under the reservation policy in any of the years after 2009, whereas non-RTE schools never enrol any student under the policy. Specifically, I estimate a triple difference model of the following form:

$$SDG_{iy} = \beta_0 + \beta_1(DG < 25p)_i + \beta_2Post_y + \beta_3RTE_i + \beta_4(DG < 25p)_i \cdot Post_y + \beta_5RTE_i \cdot Post_y + \beta_6(DG < 25p)_i \cdot RTE_i + \beta_7(DG < 25p)_i \cdot RTE_i \cdot Post_y + \beta_8X_{iy} + \alpha_i + \varepsilon_{iy} \quad (2)$$

The equation is similar to the simple DID model except now I introduce a dummy variable for RTE schools and its interaction with the treatment and time dummy.  $RTE_i$  takes the value of 1 for private schools which enrol at least 1 student under the reservation policy in any year after 2009 and 0 for schools which never enrol any student under the policy after 2009.  $\beta_4$  shows the change in the share of disadvantaged children in non-RTE treatment group relative to non-RTE control group.  $RTE_i \cdot Post_y$  is the interaction between the RTE dummy and time dummy, such that  $\beta_5$  shows how the share of disadvantaged groups changes in RTE schools relative to non-RTE schools, both in the control group.

$(DG < 25p)_i \cdot RTE_i$  is the interaction between the RTE dummy and the treatment dummy.  $\beta_6$  shows the pre-RTE difference in the share of disadvantaged groups between RTE schools in the treatment group and RTE schools in the control group, relative to the pre-RTE difference between non-RTE schools in the treatment group and non-RTE schools in the control group. Finally,  $(DG < 25p)_i \cdot RTE_i \cdot Post_y$  is the interaction between the RTE dummy, the treatment dummy and the time dummy. The coefficient  $\beta_7$  captures the triple difference effect.

In the treatment group, 50% of schools are RTE schools whereas in the control group, only 43% of schools are RTE schools. This means that schools that were below the 25% quota were more likely to participate in the reservation policy. The results of the triple difference estimation are given in Table 7. Firstly, I find that the treatment effect exists for non-RTE schools as well.  $\beta_4$  in the model is positive and significant. In columns (1) and (2), the increase in the share of disadvantaged groups in the post-RTE period was 12 percentage points more in the non-RTE treatment group compared to the non-RTE control group. Including state fixed effects (column 3) reduces the coefficient to around 10 percentage points but the level of significance does not change.

In the model with school fixed effects (column 4), the coefficient further reduces to 4.8 percentage points but remains significant. Therefore the treatment effect also persists in schools that did not give free places to disadvantaged children. Nonetheless, in column (4), the triple difference estimate is positive and significant. The increase in the share of disadvantaged groups in the post-RTE period was higher by 2.4 percentage points in RTE treatment schools compared to non-RTE treatment schools. This implies that the treatment effect was higher among RTE schools.

The results show that while non-RTE schools increased the intake of disadvantaged children following the implementation of the policy, they did not offer them free places as the policy required. So, while non-RTE schools below the quota reserved more places for disadvantaged groups after 2009, they did charge some amount of fee from them. Nonetheless, the increase in the number of places was higher in schools that offered some free places under the policy. Therefore, I conclude that the effect of the RTE Act on the enrolment of disadvantaged groups in private schools was largely 'indirect'. The

indirect effect was roughly 6 percentage points as shown in Table 6 (column 4). However, the 2.4 percentage points higher increase in the share pertaining to RTE schools (column 4 in Table 7) was a ‘direct’ effect of the reservation policy.

Table 7. Differential effect of RTE in schools participating in the reservation policy

VARIABLES	(1)	(2)	(3)	(4)
DG<25p	-0.508*** (0.003)	-0.480*** (0.003)	-0.287*** (0.003)	
Post	0.049*** (0.002)	0.049*** (0.002)	0.024*** (0.002)	0.021*** (0.001)
RTE	-0.125*** (0.004)	-0.097*** (0.004)	0.004 (0.003)	
$(DG < 25p) \times Post$	0.123*** (0.004)	0.120*** (0.004)	0.099*** (0.003)	0.049*** (0.002)
$RTE \times Post$	-0.016*** (0.002)	-0.004 (0.002)	0.004 (0.002)	-0.009*** (0.002)
$(DG < 25p) \times RTE$	0.140*** (0.003)	0.121*** (0.003)	0.004 (0.003)	
$(DG < 25p) \times RTE \times Post$	-0.030*** (0.004)	-0.030*** (0.004)	-0.014*** (0.003)	0.024*** (0.002)
Constant	0.564*** (0.003)	0.543*** (0.005)	0.230*** (0.009)	0.362*** (0.004)
Observations	950,359	943,844	943,844	943,861
R-squared	0.29	0.31	0.47	0.71
Controls	No	Yes	Yes	Yes
State FE	No	No	Yes	No
School FE	No	No	No	Yes

Notes: Dependent variable is the share of disadvantaged groups in grade 1. Control variables included are dummies for rural/urban, school size, school category (primary, upper primary etc.) and availability of pre-primary grades. Standard errors are clustered at the village level in columns 1-3 and at the school level in column 4. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 5.3 Mechanisms

Results from the previous section indicate that students from disadvantaged groups were being offered more places in private schools after the RTE Act was introduced, especially in schools that were previously below the quota. In Section 6 I show that this trend was much less evident before RTE and was predominantly observed in the post-RTE period.

Results also show that the increased share of disadvantaged groups in the post-RTE

period was not directly through the reservation policy. This suggests that most private schools were substituting disadvantaged children for RTE children (applying for free seats under the policy) in grade 1. If that is true, RTE enrolment in grade 1 would explain very little variation in the size of disadvantaged groups. To test this, I estimate the following log-log model:

$$\text{LnDGE}_{iy} = \beta_0 + \beta_1 \text{LnDGE}_{iy-1} + \beta_2 \text{LnERTE}_{iy} + \beta_3 X_{iy} + \alpha_i + \delta_y + \varepsilon_{iy} \quad (3)$$

$\text{LnDGE}_{iy}$  is the log of the number of students from disadvantaged groups enrolled in grade 1 in school  $i$  and academic year  $y$ . I control for the existing number of disadvantaged children in the school by including a lagged dependent variable. This is because as students move from one grade to the next, the number of students in year  $y$  will depend on the number of students in year  $y - 1$ .  $\text{LnDGE}_{iy-1}$  denotes the log of the number of students from disadvantaged groups enrolled in grade 1 in school  $i$  and academic year  $y - 1$ .

$\text{LnERTE}_{iy}$  is the log of the number of students enrolled under the reservation policy in grade 1 in school  $i$  and academic year  $y$ , and is the variable of interest. In DISE, from 2010 to 2012, schools are asked how many students they enrol under the policy in grade 1. Whereas, from 2013, schools are asked how many students they enrol under the policy at the ‘entry level’. Even though the entry level is typically grade 1, as per the RTE Act, it could also be a pre-primary grade. However, DISE does not collect enrolment data for pre-primary grades and only asks whether pre-primary grades are available in the school. Using this information, I remove schools where pre-primary grades were available from 2013 to 2017. This makes the independent variable  $\text{LnERTE}_{iy}$  consistent across all years.  $X_{iy}$  is the vector of control variables.  $\alpha_i$  captures the state/school fixed effects,  $\delta_y$  captures the year fixed effects and  $\varepsilon_{iy}$  is the error term.

The results are presented in Table 8. In column (1), a 10% increase in RTE enrolment is associated with a 1.6% increase in the enrolment of disadvantaged groups in grade 1. The coefficient remains the same even when I include school fixed effects (column 5). The results indicate that the majority of students who were enrolled under the RTE reservation policy did not contribute to the admission of disadvantaged groups, even though all of these disadvantaged children were eligible for free seats. This means that private schools were substituting fee-paying disadvantaged children for disadvantaged children eligible for subsidized education under the reservation policy.

However, as shown in Table 7, I also find that RTE schools had a larger increase in the share of disadvantaged children after 2009. This suggests that RTE schools were not substituting fee-paying disadvantaged children for children enrolled under the reservation policy or vice-versa. The higher share in the post-RTE period was due to RTE schools taking up students both directly through the policy and otherwise.

Table 8. Effect of RTE enrolment on the enrolment of disadvantaged groups

VARIABLES	(1)	(2)	(3)	(4)	(5)
Lagged log enrolment	0.656*** (0.003)	0.611*** (0.003)	0.608*** (0.003)	0.520*** (0.004)	
Log RTE enrolment	0.164*** (0.003)	0.123*** (0.003)	0.128*** (0.003)	0.140*** (0.003)	0.165*** (0.007)
Constant	0.410*** (0.008)	0.085*** (0.033)	-0.065* (0.035)	-0.535 (0.336)	0.756*** (0.070)
Observations	95,927	95,222	95,222	95,222	127,268
R-squared	0.50	0.52	0.52	0.55	0.88
Controls	No	Yes	Yes	Yes	Yes
Year FE	No	No	Yes	Yes	Yes
State FE	No	No	No	Yes	No
School FE	No	No	No	No	Yes

Notes: Dependent variable is the log enrolment of disadvantaged groups in grade 1. Control variables included are dummies for rural/urban, school size, school category (primary, upper primary etc.) and availability of pre-primary grades. Standard errors are clustered at the village level in columns 1-5 and at the school level in column 6. According to Angrist & Pischke (2009), a model with lagged dependent variable is similar to a model with fixed effects. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 6 Robustness checks

The increase in enrolment of disadvantaged groups in private schools is not driven by free admission under the reservation policy. However, it does seem to be indirectly influenced by the RTE Act. To further validate this, I undertake three robustness checks. First, I check if the parallel trends assumption holds both graphically and using a formal test. In particular, I look at the pre-RTE trends across the treatment (schools below the 25% quota) and control (schools above the 25% quota) groups in terms of their share of disadvantaged children. I find that even though the difference in the share of disadvantaged children between treatment and control groups was not zero before RTE, it was much smaller compared to the post-RTE period.

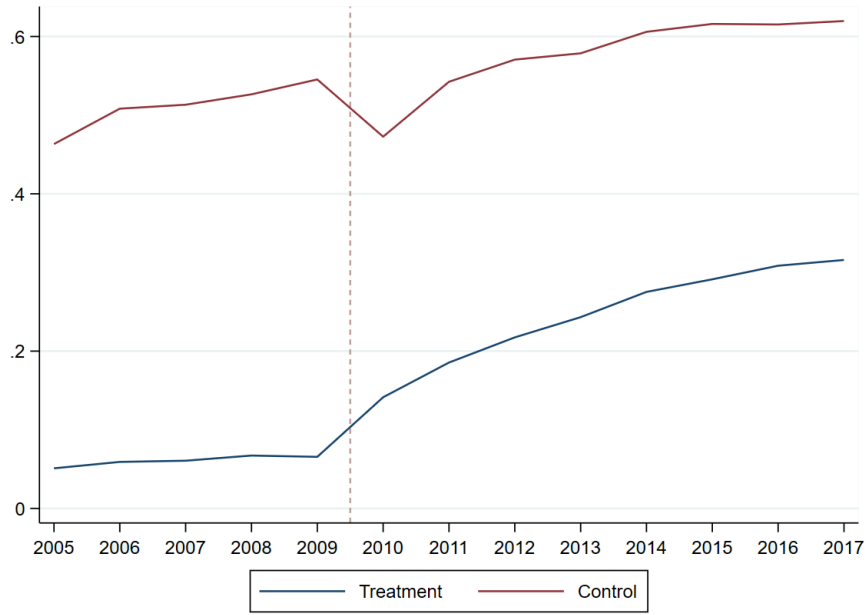
Second, I estimate a triple-difference model, where I compare the treatment and control groups across states with differential treatment. Here I first compare the state of Jammu and Kashmir where the RTE Act was not implemented, with the rest of the states. Then with Jammu and Kashmir, I include states which had few private schools enrolling any students under the reservation policy. I find that the differential effect was larger among states where the RTE Act was implemented and where there was more participation in the reservation policy.

Finally, I show that the differential effect on the share of disadvantaged children between the treatment and control groups is not driven by a differential effect on total enrolment. For this, I estimate a DID model where the dependent variable is total enrolment in grade 1. I do not find that the change in total enrolment was significantly different in treatment schools relative to control schools. This implies that the increase in the share of disadvantaged children was in fact driven by an increase in their enrolment.

### 6.1 Pre-trends

To check the pre-trends, I plot the share of disadvantaged groups over time for both the treatment and control groups, as shown in Figure 15. The trend across the two groups seems to be parallel before the implementation of the RTE Act. An interesting observation is that between 2009 and 2010, the average share of disadvantaged children dropped in the control group, while it sharply increased in the treatment group. This indicates that only private schools previously below the 25% quota offered more places to the new grade 1 disadvantaged students immediately after RTE.

Figure 15. Average share of disadvantaged groups in grade 1



I also formally test the identifying assumption by including pre and post-treatment year dummies and their interactions with the treatment dummy in the DID model. For the common trends assumption to hold, there should not be a significant difference in the pre-treatment years between the two groups. I estimate the following model:

$$SDG_{iy} = \beta_0 + \beta_1(DG < 25p)_i + \sum_{s=-4}^{s=5} \lambda_s \cdot 1(r = s) + \sum_{s=-4}^{s=5} \delta_s((DG < 25p)_i \cdot 1(r = s)) + \beta_2 X_{iy} + \alpha_i + \varepsilon_{iy} \quad (4)$$

I define  $r$  as time relative to the year of implementation, such that  $r = 0$  if the year is 2009,  $r = -4$  if the year is 2005,  $r = -3$  if the year is 2006 and so on. Similarly,  $r > 0$  for the post-RTE period and  $r \leq 0$  for the pre-RTE period. In the specification below,  $\lambda_s$  is the coefficient on the individual time periods, relative to 2009 ( $r$ ).  $\delta_s$  is the coefficient on the interaction between the treatment dummy and the year dummies relative to 2009. The dependent variable is the share of disadvantaged groups in grade 1 in private school  $i$  and academic year  $y$ .  $X_{iy}$  is the vector of control variables and  $\alpha_i$  are the state/school fixed effects.

Table 9 shows the results of the DID estimation with year dummies and their interactions with the treatment variable. I find that even in the years before the RTE Act, the increase in the share of disadvantaged groups was higher in the treatment group. For instance, between 2005 and 2009, the share of disadvantaged groups in the treatment group increased by 6.7 percentage points more than the control group. This difference

drops to 3 percentage points in 2006 and continues on a downward trend. However, after 2009, which was the year RTE was implemented, the coefficient jumps. Between 2009 and 2010, the share of disadvantaged groups increased by almost 15 percentage points in the treatment group relative to the control group.

The jump between 2009 and 2010 persists even when I incorporate a DID model with school fixed effects (column 4). In fact, between 2008 and 2009 the relative difference was only 1.7 percentage points, whereas between 2009 and 2010 it was 12 percentage points. So, even if we allow for differential trends in the pre-treatment period there is still a large treatment effect.



Table 9. Effect of RTE on the share of disadvantaged groups across years

VARIABLES	(1)	(2)	(3)	(4)
DG<25p	-0.480*** (0.002)	-0.457*** (0.002)	-0.318*** (0.002)	
$(DG < 25p) \times 2005$	0.068*** (0.003)	0.078*** (0.003)	0.098*** (0.003)	0.083*** (0.002)
$(DG < 25p) \times 2006$	0.030*** (0.002)	0.035*** (0.002)	0.042*** (0.002)	0.046*** (0.002)
$(DG < 25p) \times 2007$	0.027*** (0.002)	0.029*** (0.002)	0.026*** (0.002)	0.023*** (0.001)
$(DG < 25p) \times 2008$	0.020*** (0.002)	0.025*** (0.002)	0.025*** (0.002)	0.017*** (0.001)
$(DG < 25p) \times 2010$	0.148*** (0.003)	0.150*** (0.003)	0.140*** (0.002)	0.122*** (0.002)
$(DG < 25p) \times 2011$	0.123*** (0.003)	0.124*** (0.003)	0.114*** (0.002)	0.085*** (0.002)
$(DG < 25p) \times 2012$	0.127*** (0.003)	0.130*** (0.003)	0.112*** (0.002)	0.076*** (0.002)
$(DG < 25p) \times 2013$	0.144*** (0.003)	0.145*** (0.003)	0.121*** (0.003)	0.077*** (0.002)
$(DG < 25p) \times 2014$	0.149*** (0.003)	0.152*** (0.003)	0.125*** (0.003)	0.076*** (0.002)
Constant	0.545*** (0.002)	0.545*** (0.004)	0.260*** (0.009)	0.384*** (0.004)
Observations	952,715	946,199	946,199	946,217
R-squared	0.28	0.32	0.48	0.72
Controls	No	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State FE	No	No	Yes	No
School FE	No	No	No	Yes

Notes: Dependent variable is the share of disadvantaged groups in grade 1. Control variables included are dummies for rural/urban, school size, school category (primary, upper primary etc.) and availability of pre-primary grades. Standard errors are clustered at the village level in columns 1-3 and at the school level in column 4. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 6.2 States with differential treatment

Jammu and Kashmir is a state located in the northern part of India. Until 2019, the state received special status under Article 370 of the Indian constitution. This allowed Jammu and Kashmir to have a separate constitution and autonomous power over its administrative decisions. Therefore, despite being a national-level policy, the RTE Act was not implemented in the state. I use Jammu and Kashmir as a placebo group and estimate a triple-difference model. The argument is that since the RTE Act was not implemented in the state, there will be a large differential effect compared to the rest of the states. Specifically, the increase in the share of disadvantaged groups post-RTE will be significantly lower in the treatment group in Jammu and Kashmir.

Since there is no official definition of disadvantaged groups in Jammu and Kashmir, I calculate the enrolment of disadvantaged groups as the sum of enrolment of Scheduled Castes (SC) and Scheduled Tribes (ST) in grade 1. I do not include Other Backward Classes (OBC) because, in many states, not all children from OBC are eligible for the reservation. To see if this differential effect between Jammu and Kashmir and other states is significant, I run the following triple difference model:

$$SDG_{iy} = \beta_0 + \beta_1(DG < 25p)_i + \beta_2Post_y + \beta_3JK_i + \beta_4(DG < 25p)_i \cdot Post_y + \beta_5JK_i \cdot Post_y + \beta_6(DG < 25p)_i \cdot JK_i + \beta_7(DG < 25p)_i \cdot JK_i \cdot Post_y + \beta_8X_{iy} + \alpha_i + \varepsilon_{iy} \quad (5)$$

Here, JK is a dummy variable that equals 1 for Jammu and Kashmir and 0 otherwise.  $SDG_{iy}$  is the share of disadvantaged groups in grade 1 in school  $i$  and academic year  $y$ .  $(DG < 25p)_i$  is the treatment dummy and  $Post_y$  is the dummy for the post-RTE period. The results are given in Table 10. The triple difference estimates are negative and significant. The increase in the share of disadvantaged groups in treatment schools of Jammu and Kashmir was lower by 9 percentage points compared to the treatment schools in the rest of the states (column 1).

The magnitude becomes smaller in the model with school fixed effects but the coefficient remains negative and statistically significant (column 4). In Jammu and Kashmir, schools in the treatment group had 3 percentage points lower share of disadvantaged groups post-RTE than other states. Thus, the rest of the states had a much larger treatment effect compared to Jammu and Kashmir, where the RTE Act was not implemented.

Table 10. Differential effect of RTE in Jammu and Kashmir

VARIABLES	(1)	(2)	(3)	(4)
DG<25p	-0.454*** (0.002)	-0.429*** (0.002)	-0.285*** (0.002)	
Post	0.032*** (0.001)	0.043*** (0.001)	0.026*** (0.001)	0.017*** (0.001)
JK	-0.125*** (0.009)	-0.054*** (0.009)	0.168*** (0.012)	
$(DG < 25p) \times Post$	0.116*** (0.002)	0.114*** (0.002)	0.092*** (0.002)	0.061*** (0.001)
$JK \times Post$	-0.034*** (0.005)	-0.044*** (0.005)	-0.030*** (0.005)	-0.034*** (0.004)
$(DG < 25p) \times JK$	0.079*** (0.009)	0.054*** (0.009)	-0.087*** (0.009)	
$(DG < 25p) \times JK \times Post$	-0.093*** (0.005)	-0.093*** (0.006)	-0.069*** (0.005)	-0.033*** (0.004)
Constant	0.517*** (0.002)	0.515*** (0.004)	0.233*** (0.009)	0.355*** (0.004)
Observations	991,086	984,550	984,550	984,570
R-squared	0.28	0.32	0.48	0.72
Controls	No	Yes	Yes	Yes
State FE	No	No	Yes	No
School FE	No	No	No	Yes

Notes: Dependent variable is the share of disadvantaged groups in grade 1. Control variables included are dummies for rural/urban, school size, school category (primary, upper primary etc.) and availability of pre-primary grades. Standard errors are clustered at the village level in columns 1-3 and at the school level in column 4. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

As an additional robustness check, I club together states where few private schools participated in the reservation policy. So, with Jammu and Kashmir, I include Andhra Pradesh and Uttar Pradesh, where more than 90% of private schools did not offer any free places to disadvantaged children after 2009 (see Figure 5). I estimate a triple difference model similar to Equation (5).

Results are reported in Table 11, where the triple difference estimates are negative and statistically significant. As per column (1), in states with few RTE schools, the share of disadvantaged groups in treatment schools was 1 percentage point lower than the treatment schools in other states. In the model with school fixed effects (column 4), the share was lower by 7 percentage points. This implies that in these states, treatment schools offered relatively fewer places to disadvantaged groups after 2009 than such schools in the other states. So, states that had a larger proportion of private schools participating in the reservation policy experienced a relatively larger treatment effect.

Table 11. Differential effect of RTE in states with little participation in the reservation policy

VARIABLES	(1)	(2)	(3)	(4)
DG<25p	-0.375*** (0.002)	-0.373*** (0.003)	-0.314*** (0.002)	
Post	0.021*** (0.002)	0.029*** (0.002)	0.008*** (0.002)	-0.000 (0.001)
State	0.178*** (0.004)	0.140*** (0.004)	0.424*** (0.009)	
$(DG < 25p) \times Post$	0.112*** (0.002)	0.111*** (0.002)	0.110*** (0.002)	0.084*** (0.001)
$State \times Post$	0.032*** (0.003)	0.025*** (0.003)	0.039*** (0.002)	0.037*** (0.002)
$(DG < 25p) \times State$	-0.179*** (0.004)	-0.149*** (0.004)	0.091*** (0.004)	
$(DG < 25p) \times State \times Post$	-0.012** (0.005)	-0.017*** (0.005)	-0.067*** (0.003)	-0.075*** (0.002)
Constant	0.434*** (0.002)	0.450*** (0.005)	0.263*** (0.009)	0.354*** (0.004)
Observations	991,086	984,550	984,550	984,570
R-squared	0.33	0.34	0.48	0.72
Controls	No	Yes	Yes	Yes
State FE	No	No	Yes	No
School FE	No	No	No	Yes

Notes: Dependent variable is the share of disadvantaged groups in grade 1. State is a dummy variable which equals 1 for Andhra Pradesh, Uttar Pradesh, and Jammu and Kashmir. Control variables included are dummies for rural/urban, school size, school category (primary, upper primary etc.) and availability of pre-primary grades. Standard errors are clustered at the village level in columns 1-3 and at the school level in column 4. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 6.3 Effect on total enrolment

The share of disadvantaged groups is the ratio of the enrolment of disadvantaged groups to total enrolment. Therefore, it seems possible that the share of disadvantaged groups increased significantly in the treatment group after 2009, because *total enrolment* declined sharply relative to the control group in the same period. To check this, I estimate a DID model similar to Equation (4) with year dummies and their interaction with the treatment dummy. I replace the dependent variable with the log of total enrolment in grade 1.

Results are shown in Table 12. Even though the change in total enrolment was significantly lower in the treatment group between 2009 and 2010 (column 2), the magnitude is smaller compared to 2008. Moreover, when I include state fixed effects and then school fixed effects (columns 3 and 4 respectively), I find that the decrease in total enrolment in the treatment group in 2010 becomes insignificant. This means the change in total enrolment in grade 1 after 2009 was the same across both groups. The jump in the share of disadvantaged groups in treatment schools in 2010 was therefore entirely due to a relatively higher increase in their enrolment.

Table 12. Effect of RTE on total enrolment in grade 1

VARIABLES	(1)	(2)	(3)	(4)
DG<25p	-0.008 (0.008)	0.072*** (0.004)	0.082*** (0.004)	
$(DG < 25p) \times 2005$	-0.046*** (0.018)	-0.083*** (0.007)	-0.059*** (0.007)	-0.048*** (0.006)
$(DG < 25p) \times 2006$	-0.005 (0.009)	-0.011* (0.006)	-0.002 (0.006)	-0.014*** (0.005)
$(DG < 25p) \times 2007$	0.014* (0.008)	-0.003 (0.005)	0.007 (0.005)	0.001 (0.005)
$(DG < 25p) \times 2008$	0.017*** (0.006)	-0.028*** (0.005)	-0.015*** (0.005)	-0.016*** (0.004)
$(DG < 25p) \times 2010$	0.004 (0.006)	-0.011*** (0.004)	-0.004 (0.004)	-0.002 (0.004)
$(DG < 25p) \times 2011$	0.005 (0.007)	-0.036*** (0.005)	-0.027*** (0.005)	-0.025*** (0.004)
$(DG < 25p) \times 2012$	-0.032*** (0.007)	-0.044*** (0.005)	-0.032*** (0.005)	-0.027*** (0.005)
$(DG < 25p) \times 2013$	-0.001 (0.007)	-0.033*** (0.005)	-0.023*** (0.005)	-0.016*** (0.005)
$(DG < 25p) \times 2014$	0.007 (0.009)	-0.017*** (0.005)	-0.006 (0.005)	0.009* (0.005)
Constant	3.416*** (0.004)	1.518*** (0.007)	1.438*** (0.078)	1.731*** (0.008)
Observations	952,715	946,199	946,199	946,217
R-squared	0.001	0.54	0.56	0.76
Controls	No	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State FE	No	No	Yes	No
School FE	No	No	No	Yes

Notes: Dependent variable is the log of total enrolment in grade 1. Control variables included are dummies for rural/urban, school size, school category (primary, upper primary etc.) and availability of pre-primary grades. Standard errors are clustered at the village level in columns 1-3 and at the school level in column 4. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 7 Conclusion

This paper provides evidence on the role of India's RTE Act in increasing the enrolment of socially disadvantaged children in private schools. The RTE Act mandated all private schools to reserve at least 25% of their places in grade 1 for these children. I find that following the implementation of this policy, the enrolment of disadvantaged children increased significantly in private schools. This was accompanied by a decline in their enrolment in government schools. The increase in private school enrolment of disadvantaged children further led to an increase in their share in grade 1.

However, the increase in the enrolment and share of disadvantaged children is not just driven by an increase in the supply of private schools. I find that these effects persist within the private sector even after excluding new schools. Schools that existed before 2010 also significantly increased their share after RTE. These are mostly schools that had a low share (less than the stipulated 25%) of disadvantaged children before the policy. However, I find that this effect is not directly driven by the reservation policy, where disadvantaged children receive free places. Using a difference-in-differences strategy I find that even schools that had no take-up under the reservation policy experienced an increase in the share of disadvantaged children after RTE. Nonetheless, there was still a positive differential effect on schools that had some take-up under the policy.

Exploring the mechanisms, I find that private schools were mainly substituting fee-paying disadvantaged children for disadvantaged children who would receive free admission under the reservation policy. The enrolment under the reservation policy explains very little variation in the enrolment of disadvantaged children in the same year. However, this seems to be largely true for schools that did not participate in the policy. This is because schools that participated had a relatively higher share of disadvantaged children post-RTE. This implies that they offered more places to disadvantaged children both through the policy and by charging fees.

The findings are robust when I look at the change in the share of disadvantaged groups over time. I find that there was only a small increase in the share of disadvantaged children in all years before the policy. In fact, the increase was lowest between 2008 and 2009. However, between 2009 and 2010, when the RTE Act was implemented, there was a sudden increase in their share. This increase was around 10 percentage points more compared to the increase between 2008 and 2009. Between 2009 and 2010, the RTE Act was the only education policy implemented in India. Therefore, the huge jump in the year 2010 indicates that the RTE Act did play a role in increasing the share of disadvantaged groups.

The findings are also robust to using placebo states where the RTE Act was not implemented and where there was little participation under the reservation policy. This includes the states of Jammu and Kashmir, Andhra Pradesh, and Uttar Pradesh. Both



sets of results show that in these states the increase in the share of disadvantaged children was much lower. This again indicates that the RTE Act contributed to a higher enrolment of disadvantaged children in private schools. In particular, it was the schools that were enrolling a relatively lower share of disadvantaged children before RTE that offered them more places.

I also find that the lower the pre-RTE share of disadvantaged groups in private schools the higher the post-RTE increase in their share. This monotonic negative relationship did not exist between 2005 and 2007 or 2007 and 2009. Additionally, I find that the positive effect on the share of disadvantaged children is driven by an increase in their enrolment and not by a decrease in total enrolment. The change in total enrolment after RTE was not significantly different between schools that had a lower and a higher share of disadvantaged children before RTE.

The results from my paper imply that the majority of the disadvantaged children enrolled in private schools after RTE were not enrolled through the reservation policy. While private schools that previously had fewer disadvantaged students did see an increase in such admissions after RTE, it was mainly because these students were paying tuition fees. Therefore, private schools seem to be filling potential free spots available under the policy with these fee-paying disadvantaged students instead. This explains why the effect of the RTE Act was indirect.

Finally, my paper suggests that the general equilibrium effects of the policy largely depends on the availability of schools. The construction of new government and private schools increases competition and choice for families, and plays a crucial role in shaping enrolment patterns. With increased competition, existing private schools with a higher initial share of disadvantaged students might have struggled to expand places for them. On the other hand, schools with a lower initial share of disadvantaged students likely had more “space” to absorb an increased pool of students. Furthermore, oversubscription and undersubscription to quotas under the reservation policy is also influenced by local school availability. Given the absence of school building data at a more local level, I assume that the effects cancel out at the aggregate level.

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# A Appendix

## A.1 Figures

Figure A.1. Average enrolment of disadvantaged groups in grade 1

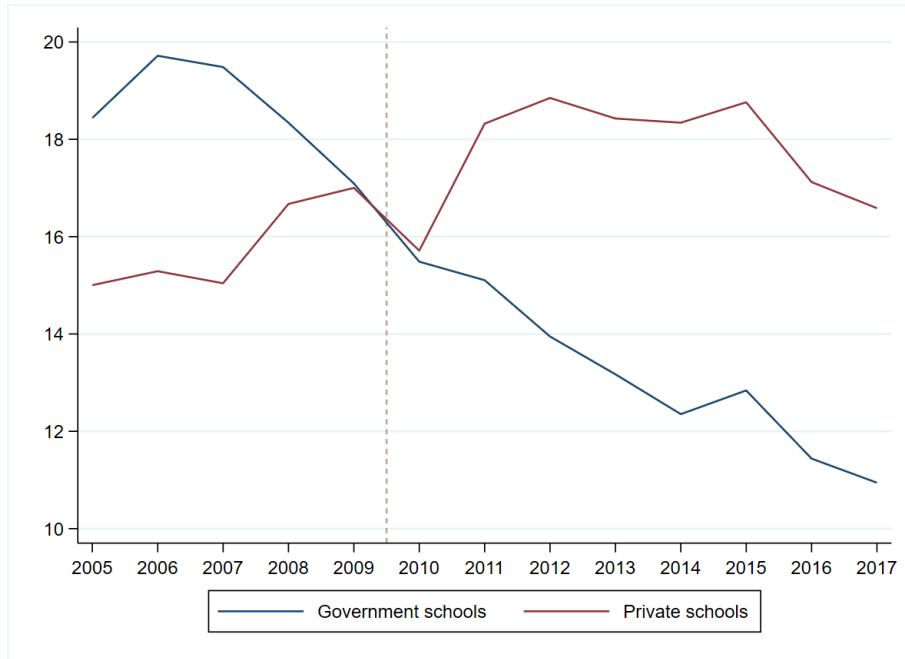


Figure A.2. SC and ST children aged 6 as a percentage of the total SC-ST population

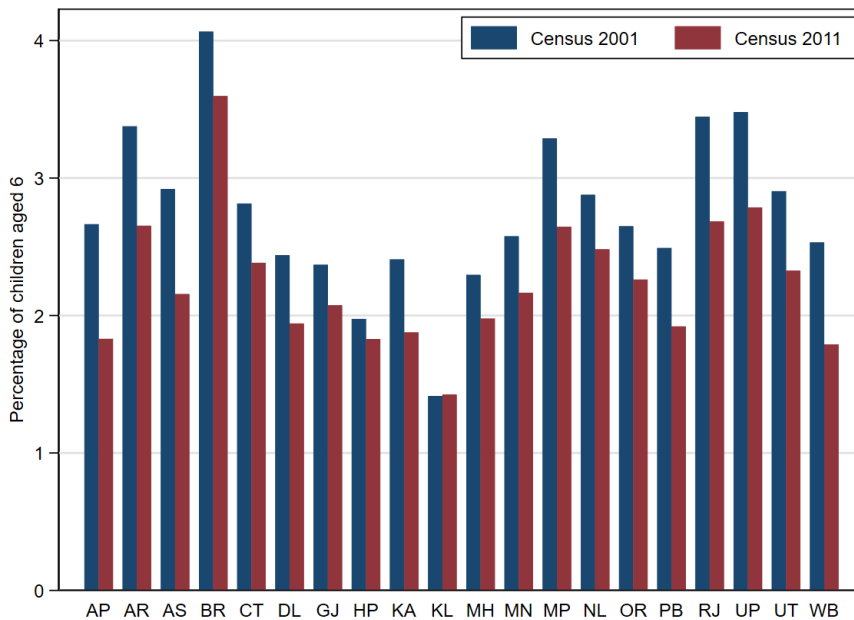


Figure A.3. Enrolment of SC and ST children aged 6 as a percentage of their population

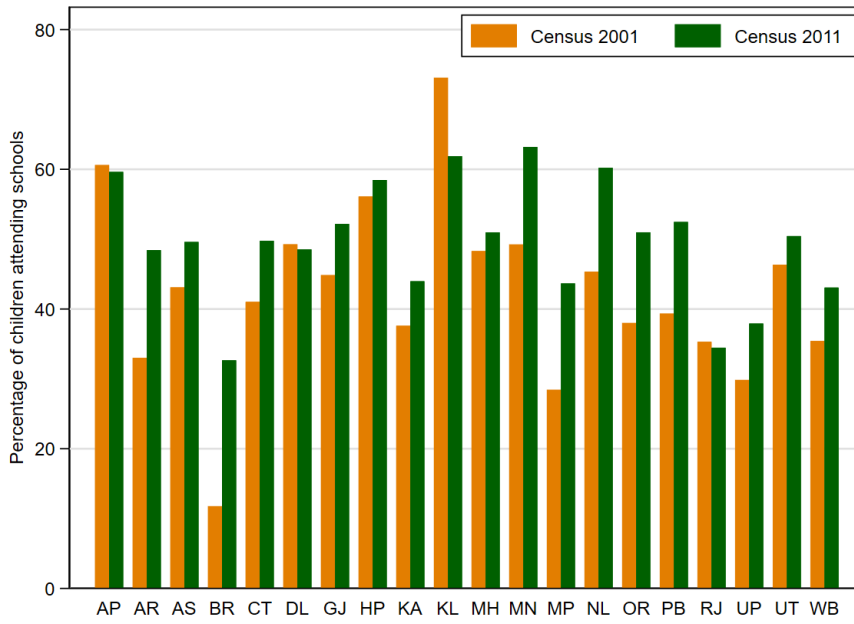
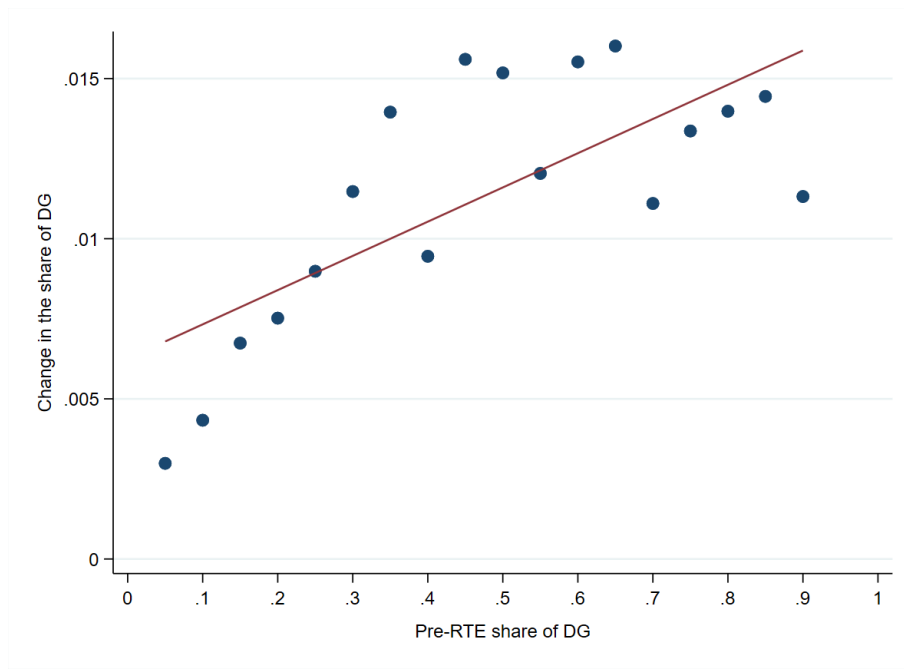


Figure A.4. Change in the share of disadvantaged groups between 2007 and 2009



Notes: The x-axis denotes the average share of disadvantaged groups in schools from 2005 to 2009. The y-axis denotes the average change in the share from 2007 to 2009.

## A.2 Tables

Table A.1. Enrolment in grade 1 in all RTE and non-RTE schools

	Pre-RTE	Post-RTE
<b>RTE schools</b>		
Average enrolment	36.81	35.74
Average enrolment of disadvantaged groups	12.33	12.89
Average share of disadvantaged groups	0.32	0.36
Observations	176,433	382,941
<b>Non-RTE schools</b>		
Average enrolment	41.78	45.37
Average enrolment of disadvantaged groups	17.61	22.85
Average share of disadvantaged groups	0.41	0.50
Observations	362,178	407,377

Notes: Haryana, Mizoram, Tamil Nadu do not enrol SC, ST, OBC or children with special needs under RTE. Jharkhand, Meghalaya and Tripura only include SC and ST from BPL families. No official definition of disadvantaged groups is available for Sikkim. Schools from these states are therefore, excluded.

Table A.2. Average enrolment of disadvantaged groups in grade 1 in RTE and non-RTE schools

State	Non-RTE schools			RTE schools		
	Pre-RTE	Post-RTE	Difference	Pre-RTE	Post-RTE	Difference
Uttar Pradesh	35 (N=117,062)	38 (N=177,694)	3.54	39 (N=12,051)	41 (N=20,452)	1.91
Rajasthan	7 (N=38,136)	7 (N=17,917)	-0.14	8 (N=59,775)	8 (N=122,430)	-0.31
Madhya Pradesh	6 (N=33,065)	7 (N=21,677)	0.76	7 (N=45,027)	7 (N=92,695)	0.33
Andhra Pradesh	7 (N=51,041)	7 (N=66,618)	0.59	7 (N=3,355)	8 (N=4,625)	0.59
Karnataka	23 (N=20,557)	21 (N=17,412)	-1.61	24 (N=15,916)	25 (N=36,553)	0.80
Maharashtra	8 (N=12,790)	7 (N=18,129)	-0.99	8 (N=5,392)	9 (N=17,512)	0.97
West Bengal	6 (N=28,222)	8 (N=21,422)	1.52	8 (N=4,018)	10 (N=10,403)	2.13
Gujarat	18 (N=10,979)	19 (N=15,422)	1.07	23 (N=8,555)	26 (N=18,852)	2.37
Chhattisgarh	8 (N=6,508)	8 (N=6,121)	0.19	9 (N=6,159)	9 (14,470)	0.70
Uttarakhand	16 (N=4,165)	17 (N=4,378)	1.33	12 (N=6,480)	13 (N=15,226)	1.62
Assam	5 (N=12,709)	8 (N=6,547)	2.87	5 (N=1,343)	7 (N=4,825)	1.34
Punjab	8 (N=5,907)	9 (N=8,645)	1.27	9 (N=1,240)	9 (N=4,632)	0.17
Odisha	15 (N=4,436)	21 (N=5,578)	6.22	16 (N=1,157)	24 (N=2,941)	7.50
Himachal Pradesh	5 (N=6,908)	7 (N=7,711)	1.98	6 (N=2,563)	7 (N=3,822)	1.84
Kerala	39 (N=732)	38 (N=6,781)	-1.19	39 (N=378)	42 (N=2,867)	2.19
Delhi	5 (N=2,864)	3 (N=1,830)	-1.50	5 (N=1,001)	7 (N=3,742)	1.24
Bihar	34 (N=731)	35 (N=1,186)	0.95	38 (N=8)	34 (N=2,264)	-3.95
Manipur	15 (N=1,861)	15 (N=2,077)	0.20	20 (N=691)	21 (N=1,367)	0.83
Nagland	46 (N=2,509)	37 (N=2,256)	-9.07	45 (N=543)	36 (N=1,109)	-9.36
Arunachal Pradesh	23 (N=335)	24 (N=989)	1.59	24 (N=126)	24 (N=515)	0.08

Notes: The difference in non-RTE schools is significant in all states except Rajasthan, Kerala, Chhattisgarh, Manipur, Bihar and Arunachal Pradesh. The difference in RTE schools is significant in all states except Punjab, Kerala, Manipur, Bihar and Arunachal Pradesh. Haryana, Mizoram and Tamil Nadu only enrol economically weaker sections under RTE. Jharkhand, Meghalaya and Tripura only include SC and ST from BPL families. No official definition of disadvantaged groups is available for Sikkim.



Table A.3. Average share of disadvantaged groups in grade 1 in RTE and non-RTE schools

State	Non-RTE schools			RTE schools		
	Pre-RTE	Post-RTE	Difference	Pre-RTE	Post-RTE	Difference
Uttar Pradesh	0.67 (N=117,062)	0.73 (N=177,694)	0.07	0.73 (N=12,051)	0.79 (N=20,452)	0.06
Rajasthan	0.25 (N=38,136)	0.29 (N=17,917)	0.03	0.24 (N=59,775)	0.27 (N=122,430)	0.03
Madhya Pradesh	0.19 (N=33,065)	0.26 (N=21,677)	0.07	0.20 (N=45,027)	0.26 (N=92,695)	0.06
Andhra Pradesh	0.17 (N=51,041)	0.19 (N=66,618)	0.02	0.16 (N=3,355)	0.18 (N=4,625)	0.02
Karnataka	0.62 (N=20,557)	0.59 (N=17,412)	-0.03	0.65 (N=15,916)	0.64 (N=36,553)	-0.01
Maharashtra	0.16 (N=12,790)	0.14 (N=18,129)	-0.02	0.18 (N=5,392)	0.18 (N=17,512)	-0.01
West Bengal	0.21 (N=28,222)	0.25 (N=21,422)	0.04	0.23 (N=4,018)	0.30 (N=10,403)	0.06
Gujarat	0.50 (N=10,979)	0.54 (N=15,422)	0.04	0.49 (N=8,555)	0.57 (N=18,852)	0.08
Chhattisgarh	0.34 (N=6,508)	0.32 (N=6,121)	-0.02	0.29 (N=6,159)	0.30 (14,470)	0.02
Uttarakhand	0.43 (N=4,165)	0.50 (N=4,378)	0.07	0.35 (N=6,480)	0.41 (N=15,226)	0.06
Assam	0.29 (N=12,709)	0.29 (N=6,547)	-0.00	0.22 (N=1,343)	0.23 (N=4,825)	0.01
Punjab	0.31 (N=5,907)	0.30 (N=8,645)	-0.00	0.27 (N=1,240)	0.29 (N=4,632)	0.02
Odisha	0.52 (N=4,436)	0.57 (N=5,578)	0.05	0.54 (N=1,157)	0.62 (N=2,941)	0.08
Himachal Pradesh	0.30 (N=6,908)	0.36 (N=7,711)	0.06	0.32 (N=2,563)	0.39 (N=3,822)	0.07
Kerala	0.55 (N=732)	0.64 (N=6,781)	0.10	0.56 (N=378)	0.65 (N=2,867)	0.09
Delhi	0.10 (N=2,864)	0.07 (N=1,830)	-0.03	0.11 (N=1,001)	0.11 (N=3,742)	0.01
Bihar	0.61 (N=731)	0.68 (N=1,186)	0.07	0.70 (N=8)	0.68 (N=2,264)	-0.02
Manipur	0.45 (N=1,861)	0.43 (N=2,077)	-0.03	0.55 (N=691)	0.60 (N=1,367)	0.05
Nagland	0.95 (N=2,509)	0.93 (N=2,256)	-0.02	0.90 (N=543)	0.85 (N=1,109)	-0.06
Arunachal Pradesh	0.79 (N=335)	0.79 (N=989)	-0.00	0.79 (N=126)	0.86 (N=515)	0.07

Notes: The difference in non-RTE schools is significant in all states except Punjab, Assam and Arunachal Pradesh. The difference in RTE schools is significant in all states except Karnataka, Assam, Delhi and Bihar. Haryana, Mizoram and Tamil Nadu only enrol economically weaker sections under RTE. Jharkhand, Meghalaya and Tripura only include SC and ST from BPL families. No official definition of disadvantaged groups is available for Sikkim.